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ABSTRACT

The overall purpose of the national Head Start evaluation is to assess the impact, on the children and parents being served, of: (1) the educational services component of Head Start, and (2) a new demonstration program within Head Start, Basic Educational Skills. The evaluation deals with a total of 65 Head Start programs and their families. This report describes the activities directly relevant to the child test data, including the development of the test battery and the data collection procedures, and presents analyses of those data. The process for selection of the child measures for the fall 1979 data collection is summarized. The procedures used for the assignment of children to groups and the collection of child descriptive and test data are described. The children in the first cohort are described in terms of background and test information. The random assignment process is reviewed and the [illegible]. Appendix

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NATIONAL EVALUATION OF HEAD START EDUCATIONAL SERVICES AND BASIC EDUCATONAL SKILLS INITIATIVE

Final Project Report - The First Cohort of Children

Project Report 11

March 12, 1981

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Project Report 1:	Design and Sampling
Project Report 2:	Panel Recommendations
Project Report 3:	Child Outcomes: Individual Testing Battery for the Fall 1979 Cohort
Project Report 4:	National Evaluation of Head Start Educational Services and Basic Educational Skills Initiative: Individual Testing Battery for Fall 1979
Project Report 5:	OMB Submission Package
Project Report 6:	Description and Analysis of Program Data: Basic Educational Skills Initiative
Project Report 7:	Description and Analaysis of Program Data: Head Start Sample Programs
Project Report 8:	Generalizability Studies of the Child Test Battery and of the Alternative Classroom Environment Scales
Project Report 9:	Procedures in the Implementation of the Study Design, 1978-79
Project Report 10:	Phase II Executive Summary Report: Fall 1979 Child Test Data Collection
Project Report 11:	Final Project Report - The First Cohort of Children

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- The staff and volunteers of these Head Start centers, Delegate Agencies, and Grantees who participated in the evaluation, answered our many questions, and allowed us to observe in their classrooms:

Basic Educational Skills Head Start Programs

Seattle, Washington
Knoxville, Tennessee
Topeka, Kansas
Spokane, Washington
Naples, Florida
Gary, Indiana
Easton, Pennsylvania
Albany, New York
Red Lake, Minnesota
East Boston, Massachusetts
Leominster, Massachusetts
Russelville, Arkansas
Amarillo, Texas
Albuquerque, New Mexico
Pleasant Hill, California
Huntington, West Virginia
Riverside, California

Head Start Programs

Goldsboro, North Carolina
Sumter, South Carolina
Asheville, North Carolina
New Bern, North Carolina
Edenton, North Carolina
York, Alabama
Maywood, Illinois
Norfolk, Virginia
Greeley, Colorado
Elmsford, New York
Saginaw, Michigan
Seattle, Washington
Redwood, California
Chicago, Illinois
Chandler, Oklahoma
Detroit, Michigan
Columbus, Ohio
Baltimore, Maryland
Denmark, South Carolina
Uniontown, Pennsylvania
Price, Utah
Austin, Texas
Lafayette, Louisiana
Jackson, Mississippi
Terrell, Texas
Oceana, West Virginia
Greensburg, Pennsylvania
Los Angeles, California

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NATIONAL EVALUATION OF HEAD START EDUCATIONAL SERVICES AND BASIC EDUCATIONAL SKILLS INITIATIVE

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CHAPTER 1

HEAD START/BES EVALUATION DESIGN

Each year Head Start programs serve approximately 385,000 children and families, at a cost of over $700 million dollars--the largest annual federal expenditure for the education of preschool children. NTS Research Corporation is currently conducting the beginning phases of the largest and potentially most long-term evaluation of Head Start programs yet planned. The overall purpose of this evaluation is to assess the impact on the children and parents being served, of: (1) the educational services component of Head Start programs nationwide, and (2) a new demonstration program within Head Start and elementary schools, Basic Educational Skills. The evaluation deals with a total of 65 Head Start programs and their families, potentially for 7 to 10 years.

Head Start is a nationwide program for preschool children of low-income families and is supported by the United States Department of Health and Human Services. Since its inception in 1965, the goal of Head Start has been to improve each child's ability to deal both with the present environment in which he or she lives and with later responsibilities in school and life. Head Start provides services not only in the educational area, but also in the areas of health, nutrition, parent involvement and social services. While this is an evaluation of the educational component, the study also gathers information on Head Start's other components.

The Basic Educational Skills Program is the newest experimental project initiated by Head Start. As stated in the BES Program Guidelines:[1]

---

[1] Administration for Children, Youth, and Families, Basic Educational Skills Project: A Head Start Research and Demonstration Initiative in Collaboration with the Elementary Schools: Guidelines for Local Head Start Programs and Elementary Schools. March 1979.

> The purpose of the (BES) project is to demonstrate and test effective educational strategies that help young children acquire developmentally appropriate educational skills in a climate that supports physical, intellectual, social, and emotional development. The project links Head Start programs and public schools, together with parents, in a collaborative effort to facilitate the child's learning experiences. The overall objective is to enhance school readiness, later school achievement, and to promote attitudes conducive to life long learning. The specific aim is to try out a variety of educational approaches to increase the child's basic educational skills, with emphasis on learning outcomes in oral language, reading, writing, mathematics, science, problem-solving, and learning attitudes. (Learning attitudes include self-esteem as a learner, motivation, curiosity, initiative, purposefulness, persistence, task completion, and interest in life-long learning.) (p. 1)
>
> The goals of this project are to examine the effectiveness of a variety of approaches of implementing the four program elements: Curriculum, Parent Involvement, Teacher Attitudes and Behaviors, and Continuity. These program elements have been highlighted by reviews of research and educational practice as among the principal variables that affect children's educational achievement. The principal purpose of the BES field experiment is to determine the contribution of variables associated with the four elements to children's acquisition of basic educational skills. (p. 5)

Individual Head Start programs are operated by local grantees which are community action organizations, public school systems, tribal councils, and other non-profit agencies. Decisions about such issues as staff, curriculum, facilities, and recruitment procedures are made by a local policy council composed of parents and other members of the community. With this kind of local initiative, Head Start programs vary widely from one location to another in the ways in which they deliver services--within the guidelines of performance standards set by the Federal agency which funds and administers the program, the Administration for Children, Youth and Families (ACYF). The national office of ACYF also periodically funds special demonstration programs (such as BES) for the purpose of initiating, testing, and disseminating innovative program ideas.

The regional offices of ACYF are responsible for monitoring local program service delivery to ensure that each program meets the required performance standards. Evaluations of Head Start program outcomes are initiated by the national office of ACYF. The evaluations are diverse and include three distinct kinds:

- Evaluations of the basic National Head Start program, which use representative national samples of about 30 of the total 1,800 programs, and examine the areas of Health Services, Educational Services, Social Services, Parent Involvement, Services to Handicapped Children, Services to Migrant Children, and Staff Training.

- Evaluations of the Head Start demonstration programs, each of which involve about a dozen sites nationally, including, for example, Project Developmental Continuity, the Child and Family Resource Program, Home Start Training Centers, the Bilingual/Bicultural Curriculum Project, and the BES project.

- Projects to develop evaluation measures and methods; for example, the project to translate the ETS CIRCUS preschool test battery into Spanish, and the project to develop a comprehensive set of measures of program effects on preschool children.

This evaluation represents both the first and second categories above; it is a nationwide evaluation of the Educational Services of the basic Head Start Program and the evaluation of the most recent Head Start demonstration project, Basic Educational Skills.

ACYF has actively gathered information over the past fifteen years regarding both program delivery and program effects. A unique aspect of the evaluation described in this report is its focus on the relationship between program delivery and program effects on a national scale.

Overview of the Head Start Evaluation Design

This evaluation is a longitudinal study that will follow children and their parents from preschool through the fourth grade. The study focuses on the preschool and elementary experiences of three groups of children and their parents:

- Those who participate in the Basic Educational Skills demonstration program--the BES Group

- Those who participate in typical Head Start programs--the Head Start Study Group

- Those who are eligible for Head Start but who are not enrolled--the Alternative Services (Control) Group

The major evaluation questions to be addressed in this study are as follows:

1. What different types of approaches do Head Start programs use to deliver educational services? How do these approaches differ in BES programs? How do these approaches differ from programs in alternative service settings?
2. How do different program approaches, and ways children and parents partake of the programs, affect the benefits achieved by children and parents?
3. Do children and parents in BES programs benefit more than children and parents in non-BES Head Start programs? Do children and parents in both BES and non-BES Head Start programs benefit more than children and parents in alternative service settings?

The dominant issue contained in this set of questions is a focus on the relationships between program delivery and program effects on a national scale.

The evaluation is longitudinal and will study children (and their parents) from preschool through the fourth grade in three cohorts (one small cohort and two full cohorts). Each full cohort will be drawn from 16 Basic Educational Skills demonstration programs and from 30 randomly selected Head Start programs and their communities. As originally designed, the evaluation will involve 4560 children and their families per full cohort: 60 BES children from each BES program, 60 Head Start from each regular Head Start program, and 60 non-Head Start children from each regular Head Start program's community.

The study design is innovative for two reasons. First, it focuses on the relationships between process and outcome variables in preschool settings. Second, it is one of the first preschool field evaluations to incorporate a true experimental design. In those instances in which a participating Head Start program receives applications from more children than it can serve, random assignment of children into the Head Start program and a non-Head Start group has been and will be implemented. The use of this study plan will, hopefully, result in one of the strongest research efforts ever conducted under the auspices of ACYF.

Phase I and II Evaluation Activities

The initial phase of the evaluation had two foci: (1) selecting and securing the cooperation of the programs in the evaluation and (2) collecting "process" data on the delivery of services by programs.

Regular Head Start programs were selected early in Phase I of the evaluation; 30 programs were initially selected by a sampling procedure which insured that the final sample of children would be representative of all Head Start children.[2] Program-level difficulties in two programs resulted in a final sample of 28.[3] The BES programs became involved in the evalua- tion when they were awarded the BES grants.

To secure program cooperation, NTS staff members visited programs individually. Five-day visits were scheduled to each site in the Spring of 1979. Site visitors met with program staff, parents, Policy Councils or Committees, and Grantee representatives to disseminate information on the evaluation and the program's role in evaluation activities. Site visitors also collected information by means of structured interviews (Program Description Interview, Center Description Interview, and Teacher Interview) and classroom observations (Alternative Classroom Environment Scales). In 22 regular Head Start sites, a local Study Coordinator was hired to serve as the NTS representative to help coordinate study procedures in the field.[4]

During the site visits, regular Head Start programs were identified as either "randomization" or non-randomization" sites, depending on the feasibility of identifying a non-Head Start comparison or control group for the first cohort. Fourteen programs were initially identified as programs where random assignment to Head Start and "Alternative Services" groups would be attempted during the immediately following program year. (The Alternative Services Groups were so named because the local programs were awarded grants by ACYF to allow them to offer dental services to children in these groups).

In the other 14 programs, there were no possibilities of comparison groups for the first cohort. In nine of these programs, enrollment for the fall had either begun by the time of the site visit or would begin so soon after the visits that there was no time for NTS to implement random assignment. In the other five sites, the programs had such serious doubts that sufficient extra children could be recruited that it was decided not to attempt randomization during that year. In the 14 non-randomization sites, the 60 Head Start children to be tested were randomly selected from among those enrolled in the program; where the program enrolled fewer than 60 children, as many as possible were tested.

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[2] The sampling process is fully described in Project Report 7.

[3] The loss of these two programs occurred too late in the evaluation for replacement during phases I and II.

[4] The site visits are fully documented in Project Report 9.

During the months following the site visits, the Study Coordinators provided NTS with information on the status of recruitment in the 14 randomization programs. By October 1979, it became clear that in six of these programs there were insufficient numbers of surplus children to comprise comparison groups. In one of the randomization programs, approval for the study from the research department of the public school system (Grantee for the program) was not granted in time for testing. Therefore, after October 1979, of the 14 randomization sites, there were seven sites where random assignment occurred, six sites where random assignment did not occur and one site with no selection or testing.

Of the 14 programs where randomization was not to be attempted this program year, two of the programs did not participate in child data collection. One program was undergoing an administrative change of Grantees and asked to wait for one year before participating in the study. A bilingual program was eliminated from participation in the first cohort as not all of the parent information materials had been adequately translated into Spanish for use by local data collectors. Therefore, of the 14 non-randomization sites, 12 participated in testing and two did not. Sixty Head Start children in each program were randomly selected for the sample.

Phase II of the evaluation concerned the collection of child test data (impact of program service delivery). Numerous activities preceded actual data collection, including the recruitment and selection of children into programs, the random assignment of children into Head Start or non-Head Start groups, the hiring and training of local data collectors, and obtaining parental permission for testing.[5]

During the two phases, the child test battery was developed, pilot tested, and revised. Phase II culminated with the administration of child tests in the Fall of 1979 and the compilation of all test data.

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[5] These procedures are described at length in Project Report 9.

The original evaluation design called for a Spring 1980 posttesting of the children who participated in the fall 1979 testing. This Phase III was not funded as planned and no posttest took place.

Overview of This Report

The remainder of this report describes at length the activities directly relevant to the child test data, including the development of the test battery and the data collection procedures, and presents analyses of those data. For a complete description of the entire evaluation to date, the reader is referred to Project Reports 1, 3, 6, 7, 8, 9, and 10.

Chapter Two, "Development and Description of the Testing Battery for Head Start-Aged Children," summarizes the process through which we selected the child measures for the fall 1979 data collection. Chapter Three, "Child Data Collection," describes the procedures used for the assignment of children to groups and the collection of child descriptive and test data.

Chapters Four, Five, and Six discuss the results of the assignment of children to groups and of the data collection. Chapter Four focuses on the samples of children in each of the three groups in this first child cohort of the evaluation and describes them in terms of background and test information. Chapter Five reviews the random assignment process and presents recommendations for the future use of random assignment in this and other similar evaluations. Chapter Six describes the psychometric properties of the child measures.

Appendix A contains a copy of the child testing booklet. Further information on the testing materials and the training of testers is available from NTS Research Corporation. Appendix B (bound separately) contains the item response distribution tables, which show the frequency of each possible response for each item of each measure: for the entire sample, by each of three groups, by each of eight age categories, and by each of 43 site/groups.

CHAPTER 2

DEVELOPMENT AND DESCRIPTION OF THE TESTING BATTERY FOR HEAD-START-AGED CHILDREN

Identification of Skill Areas

This evaluation is twofold: it will assess the impact of the educational services component of Head Start on young children by comparing children who have experienced Head Start with a group of children who do not participate in Head Start. Secondly, the effectiveness of the Head Start Basic Educational Skills project is being studied. One set of measures has been designed for use in both aspects of the evaluation. The BES Phase I Guidelines (Klein, 1978) thus were used heavily in identifying areas in which to test children, since both NTS and ACYF believe those guidelines to be relevant to the assessment of regular Head Start program effects as well.

Basic Educational Skills Initiative

The ACYF Basic Educational Skills project was initiated in response to President Carter's "call for efforts to assist children in acquiring the basic skills they need to function successfully in a complex society...although these (skills) will contribute to children's later academic learning, they also include skills in communication and problem solving as well as positive learning attitudes." (Klein, 1978, p.1)

What are basic educational skills? "Within the context of Head Start and its goals, developmentally appropriate skills are those which are necessary for the later acquisition of skills and learning commonly recognized as reading, writing, and mathematics, but which also include language, science, problem solving and the development of positive attitudes toward learning." (op.cit., p.2) These "preskills" are not, it is pointed out, watered down versions of the academic skills usually taught in the primary grades. This is a vital point; there is substantial evidence in the cognitive development literature that the cognitive processes of four or five year olds and seven or eight year olds differ qualitatively, not just quantitatively. According to Piaget, for example, (see Flavell, 1963, for a review of the theory), the younger child is in the stage of preoperations, characterized by concrete and static thought, inability to take another's point of view, and an inability to take into account more than one aspect of a problem at a time. The older child is better able to deal with abstractions, can take points of view other than his own, and can understand that two aspects of a problem may compensate for each other. One cannot simply follow a continuum of skills from age 4 to age 7; differences in thought processes must be taken into account. The task of identifying appropriate preor basic skills is thus not a simple one.

Some of these skills are identified in the BES guidelines: "Continued interest in learning, the ability to understand and use language in speaking and listening to thers, beginning to understand concrete relationships such as quantity, size and shape, to discriminate between different shapes and colors, and to begin to recognize symbols such as letters and words." (Klein, 1978, p.3)

The BES Phase I guidelines paper (Klein, 1978) and the Abt approach paper (Bache, Brush, Larson and Mathis, 1978) provided us with an outline to the definition of the basic skills to be considered in designing the battery. The guidelines in the Abt paper delineate the BES curriculum into five basic areas: Oral Language, Reading, Writing, Mathematics, and Science/Problem Solving (see Table 2.1).

Concept Papers

Although the BES guidelines are fairly complete in presenting examples of classroom activities that relate to the BES areas, identifying testable precursor or basic skills is somewhat more difficult. Therefore, NTS took the further step of consulting several child development experts for their recommendations. We decided to ask for "concept papers:" short, concrete reviews of current thinking on precursors to basic academic skills. The papers focused on the areas of reading/writing and mathematics. We felt that NTS had

TABLE 2.1
Basic Educational Skills:
Areas for Curriculum Focus

Oral Language	Reading	Writing	Mathematics	Science Problem Solving
NARRATION • Discussing events and asking questions in the context of conversation	**COMPREHENSION** • Listening to stories and engaging in conversations about them	**MOTOR COORDINATION** • Using a variety of art materials for painting, drawing	**CLASSIFICATION** • Grouping and ordering sizes and shapes in the context of block play	**EXPERIMENTATION** • Mixing paint or playdough for use in art activities
COMMUNICATION • Engaging in dialog in dramatic play	**SYMBOLIZATION** • Pretending to read by using pictures and props symbolically in dramatic play	**SHAPE DISCRIMINATION** • Recognizing two dimensional shapes, as a form in pictures or one's name	**NUMERATION** • Matching shapes, colors, or symbols to identical items during games with manipulatives	**EXPLORATION** • Balancing structures or creating and using inclines in block play
DESCRIPTION • Describing block buildings, specific block shapes and accessories	**SEQUENCING** • Using manipulative materials to sequence pictures or arrange page	**SENSORY INTEGRATION** • Skipping, hopping, and climbing using alternate feet/legs, hands/arms in outdoor play	**QUANTIFICATION** • Measuring ingredients for cooking activities	**COMPARISON** • Using a magnifier or balance with a variety of manipulative materials
AUDITORY DISCRIMINATION • Differentiating sounds in the context of signing or listening to music	**FIGURE-GROUND DISCRIMINATION** • Looking at pictures in books with attention to shapes, colors, and outlines		**NUMERICAL RELATION** • Clapping, foot-stomping, and beating instruments to music	**INFERENCE** • Baking or cooking to anticipate foods' changes in form, color, taste, and smell
CONCEPTUALIZATION • Taking field trips to familiar places in the community, such as grocery, fire station	**ORIENTATION** • Taking field trips to places that make written language meaningful, e.g., library		**ESTIMATION** • Running, throwing, and catching a ball in outdoor play	**OBSERVATION** • Taking field trips or short walks to observe nature

the in-house competence to determine precursors in the language area. In place of a concept paper for the science/problem solving area we arranged for a one-day consultation.

Robert Calfee of Stanford University contributed a paper on assessment of precursor skills to reading and writing. Joan Heller and Lauren Resnick wrote a paper on "Skills and Concepts Preparatory to Formal Schooling and Mathematics" (copies of these papers are contained in the Appendices to Project Report 3). Finally, Jacelyn Wedell-Monnig of NTS met with Irving Sigel of ETS to discuss skills essential to the science/problem solving area.

Briefly, very basic precursors were emphasized by all the consultants. Calfee discussed the child's need to be in command of a certain minimal level of language before the acquisition of reading and writing can commence. He also emphasized the importance of "metaknowledge": the child's conscious understanding of what a sentence is. Heller and Resnick stated that the child must have knowledge of specific quantitative skills and concepts, including (1) counting and numbers; (2) concepts of equivalence, more, and less; (3) mathematical operations and problem solving; and (4) measurement. The authors also noted that many primary grade tasks involve following instructions and making required marks on paper. A child must have sufficient perceptual and fine motor skills to perform the task without the mechanics interferring with the content of the lesson. Finally, Sigel expressed his opinion that the science/ problem-solving area would be best assessed by focusing on language. Can the child transform an idea from one symbol system to another? Does he understand expressed quantities (e.g., more/less)? The battery, as will be seen shortly, adopts this approach and is heavily language-oriented.

Both the reading/writing and mathematics concepts papers emphasize the need for the children to master certain skills before the later respective skills can be learned in the primary grades. Many of these skills concern the acquisition of facts such as letter, number, color, and shape names. We included world knowledge, since the child who is not in command of general and basic facts will be at a certain disadvantage in acquiring further information. Likewise, the child whose visual and auditory memory skills are not well developed will not be able to master basic reading/writing and mathematics concepts.

TABLE 2.2

Areas of Skills to be Assessed

Factual Knowledge

Letter Names
Number Names
Color Names
Shape Names
World Knowledge

Memory Skills

Visual Memory
Auditory Memory

Cognitive Skills

Spatial Reasoning
Classification
Numeration and quantification
Problem Solving

Communication Skills

Oral Language Production
Vocabulary
Creativity
Syntax

Oral Language Comprehension
Vocabulary
Comparatives

Perceptual/Psychomotor Skills

Visual Discrimination
Auditory Discrimination
Fine Motor Skills
Gross Motor Skills

Social Skills

Cognitive skills are essential in gaining understanding of number systems as well as in solving problems.

Communication skills are basic to the area of language and science/problem solving, as well as to reading/writing. Finally, as pointed out by Heller and Resnick in their concept paper, certain perceptual/psychomotor skills are essential to success in many primary grade tasks.

Social/emotional development is not emphasized in this list to the same extent as cognitive skills. We feel that such development cannot be fully assessed by means other than direct observation of the child. High/Scope came to the same conclusion in their recommendations for measures for Project Developmental Continuity (Love, Wacker, and Meece, 1975). In terms of self-concept, for example, High/Scope stated that:

> The fundamental difficulty with the construct of self-concept is the multiplicity of definitions. Many critics (Coller, 1971; Crowne and Stephens, 1961; Taylor, Winne, and Marx, 1975) have concluded that what are called self-concept measures actually assess many different constructs. No agreed upon operational definition of self-concept exists, largely because there are a great variety of instruments and techniques for narrowly defined aspects of self-concept, so that "it is likely to be defined as 'that which a self-concept test measures'" (Walker, 1973). This, of course, makes the selection of any one instrument as a measure of program effectiveness especially problematic. (Love, Wacker, and Meece, 1975, p. 18).

Likewise, other areas discussed in the NTS Proposal (McNeil, Stenner, Wendell-Monnig, Mengel, et al., 1978) cannot be assessed in one or two sessions. Data on school and community success, for example, will be collected from records over the course of the evaluation.

Screening of Tests

A summary form was developed for screening each test examined for possible inclusion in the battery. After summaries on all considered tests were complete, the summaries were studied to determine which tests met the following criteria (order below does not indicate relative importance):

1. Yields relevant and analyzable data. The test should be relevant to the skills we have determined are important to assess. The results must be interpretable in light of Head Start program objectives.

2. Free of cultural biases to the extent possible. Many cultural groups are represented in the population under study. We rejected many tests on the basis of being appropriate for only a few of these groups. Tests must be fair both in terms of content and scoring of responses.

3. Normed (or at least used) on a population relevant in terms of social class, cultural groups, and age. Although we do not plan to compare our data to existing norms, previous use of the test with a similar population gives indication of whether other researchers found the measure to be reasonably relevant to that population.
4. Reliability and validity data available and acceptable. Preferably used in other large scale evaluations of preschool and elementary level programs to improve the comparability of results from one evaluation to another.

5. Instrument must have high generalizability (see McNeil, et al, 1978, and Project Report 8 for a full discussion of generalizability).

6. Instrument can be readministered to same children (repeatability). As this evaluation involves preand post-testing, we must be able to use the same tests at least twice for each child.

7. Able to be administered by trained paraprofessionals. In most sites, children will be tested by local data collectors, hired and trained by NTS. It is vital that these people can master the test in a short but intensive training session. This means that testing procedures must be very clear and precise.

8. Able to be administered quickly and with minimal equipment. The testing time per child will be no more than one hour. Therefore, each test in the battery must be brief and concise. Minimal equipment needs reduce cost and difficulty of testing.

9. Individually administered. All tests will be given in individual sessions with only the tester and child present, if at all possible.

10. Child should be unaware that she/he has failed an item. Tests were carefully examined to determine if a child could become unnecessarily discouraged. Feedback on selected tests is neutral as often as possible, to avoid giving the child information on his or her performance. We feel that neutral feedback will have the least effect on the child's performance on subsequent tests.

Many tests used in other assessments were not even screened as they did not meet more than one or two of the criteria. The tests that we screened are listed in Table 2.3. Also in Table 2.3 are brief summaries of the data we examined to make preliminary test selection.

Two assessment batteries and one test emerged from the screening as highly relevant to our evaluation: The McCarthy Scales of Children's Abilities (MSCA) (McCarthy, 1972), the Basic School Skills Inventory (BSSI) (Goodman and Hammill, 1975), and the Preschool Interpersonal Problem Solving Task (PIPS) (Spivak and Shure, 1974). Neither of the two batteries were judged to be appropriate for use in entirety. The MSCA is a lengthy test and includes many subtests not of interest to us. The BSSI not only contains material not useful to us, but was designed as an informal assessment device to be used by teachers and needed to be redesigned in order to be administered in a consistent manner.

Certain subtests of the MSCA were used by High/Scope in the assessment of Project Developmental Continuity. High/Scope's decisions on the subtests for their own batteries were taken into account in designing the present battery.

The specific MSCA and BSSI subtests selected and the modifications made are discussed in the next session, along with a summary of PIPS.

Pilot Test Battery

A breakdown of the battery utilized for the June 1979 Pilot Test by test item and relevant skill is contained in Table 2.4. Within Table 2.4, items relevant to each element are numbered only if the items of the subtests differ from one another in content (as in the first four tests listed). Otherwise, an X indicates that the entire test is relevant to the respective element.

Two areas have no test items: (1) Oral Language Production: Syntax, and (2) Perceptual/Psychomotor Skills: Auditory Discrimination. It is very difficult to test for performance in these areas without an unacceptable degree of cultural bias. "Proper" syntax varies greatly between subcultures in this country and even within a subculture. Likewise, a child learns to attend to certain sounds and not to others, depending upon the language or dialect he hears and speaks.

MSCA Subtests Selected

The MSCA is a well known, though relatively recent (1972) individual assessment measure for two-and-a-half to eight-and-a-half year old children.

TABLE 2.3

Tests Considered for Battery

Variables / Test	Contents: Factual Knowledge	Contents: Memory Skills	Contents: Cognitive Skills	Contents: Communication Skills/Oral Language	Contents: Perceptual Psychomotor Skills	Contents: Social Skills	Age Range	Length of Test	Cultural Biases	Psychometric Variables: Relevant Norming Population	Psychometric Variables: Validity Data	Psychometric Variables: Reliability Data	Comments
Animal Crackers						X	Preschool Grade 1	20-[illegible]	Not recommended for bilinguals	No (largely white)	Data from Gumpgookies. Sig. correlations with teacher ratings of motivation	r = .94-.98 (KR-20)	Many references to school and teacher - bias against control group.
Basic School Skills Inventory: Basic Information	X						4-6 years	5-7 mins.	Some items	Yes	High correlations with MRT and teacher ratings (entire battery)	r = .60-.76 (Internal consistency coefficients) High test-retest correlations with small n	Intended to be administered by teacher.
Basic School Skills Inventory: Number Readiness	X		X	X			4-6 years	7-10 mins.	No	Yes	High correlations with MRT and teacher ratings (entire battery)	r = .78-.90 (Internal consistency coefficients) High test-retest correlations with small n	Intended to be administered by teacher.
Basic School Skills Inventory: Reading Readiness	X		X		X		4-6 years	7-10 mins.	Auditory discrimination items	Yes	High correlations with MRT and teacher ratings (entire battery)	r = .88-.98 (Internal consistency coefficients) High test-retest correlations with small n	Intended to be administered by teacher
Concepts							K-1	mins.	?	ficient data		(split half)	advanced for 4 year olds
CIRCUS: Copy What You See (A)					X		preschool	30 mins.	No	No (largely white, middle class)	No studies reported	r = .87-.90 (alpha) r = .89-.90 (split half)	Cannot be machine scored
CIRCUS: Do You Know (A)	X						preschool	30 mins.	Definite biases	No (largely white, middle class)	No studies reported	r = .77-.79 (alpha) r = .79-.80 (split half)	Very biased in favor of white middle class
CIRCUS: Finding Letters and Numbers (A)	X				X		preschool	30 mins.	No	No (largely white, middle class)	No studies reported	r = .86 (alpha) r = .86-.87 (split half)	
CIRCUS: How Much and How Many (A)	X		X	X			preschool	30 mins.	Biased	No (largely white, middle class)	No studies reported	r = .56-.57 (alpha) r = .57-.58 (split half)	Quantitative concepts measure may be confounded with vocabulary comprehension
CIRCUS: How Words Work (A)				X			preschool	30 mins.	Biased	No (largely white, middle class)	No Studies reported	r = .63-.78 (alpha) r = .73-.81 (split half)	Understanding of factors: scores difficult to interpret
CIRCUS: Listen to the Story (A)				X			preschool	30 mins.	Biased	No (largely white, middle class)	No Studies reported	r = .60-.79 (alpha) r = .79-.80 (split half)	Receptive language

TABLE 2.3 (Continued)

Tests Considered for Battery

Variables / Test	Contents: Factual Knowledge	Contents: Memory Skills	Contents: Cognitive Skills	Contents: Communication Skills/Oral Language	Contents: Perceptual Psychomotor Skills	Contents: Social Skills	Age Range	Length of Test	Cultural Biases	Psychometric Variables: Relevant Norming Population	Psychometric Variables: Validity Data	Psychometric Variables: Reliability Data	Comments
CIRCUS: Look Alikes (A)					X		preschool	30 mins.	No	No (largely white, middle class)	No studies reported	r = .52-.84 (alpha) r = .86-.88 (split half)	Measures ability to Mark letters, number, shapes, objects
CIRCUS: Say and Tell (A)					X		preschool	untimed	No	No (largely white, middle class)	No studies reported	r = .49-.72 (alpha)	Productive language. May be difficult to machine score
CIRCUS: Think it Through (A)			X				preschool	30 mins.	Relatively unbiased	No (largely white, middle class)	No studies reported	r = .81-.82 (alpha) r = .81-.82 (split half)	problem solving; classification, sequences
Cognitive Abilities Test (Primary Battery)			X				K - Grade 2	Untimed; averages 34 mins.	No	Data not yet available	Data not yet available	For previous form - r = .92-.94 (KR-20)	size, position, quantity, classification, vocabulary, relational concepts
Inventory			X	X	X	X	3-6 years	13 mins.	see Comments	Yes	Binet IQ	r = .84-.92 (split half)	of intervention and degree of disadvantage
McCarthy Scales of Children's Abilities (MSCA): Block Building			X		X		2 1/2-8 1/2 years	3-5 mins.	No	YES	High position correlation (.70-.85) of total score (entire battery) with WPPSI and Stanford Binet IQ's. Moderate correlations (.30-.49) with first grade achievement tests. Very small sample (n=35)	Average split half coefficients: General cognitive scale, r =.93 Perceptual-Performance scale, r =.84 Verbal scale, r=.88, Memory scale, r=.79 Quantitative Scale, r=.81 Motor Scale r=.79	Scoring would have to be revised; too precise as is for real time scoring.
MSCA: Puzzle Solving			X					3-10 mins.	No				Consistent scoring may be a problem
MSCA: Pictorial Memory		X		X				3-5 mins.	Yes some items				Would be appropriate if better items selected.
MSCA: Word Knowledge				X				3-5 mins.	Yes some items				Stimuli appear inappropriate for use with this populations
MSCA: Number Questions			X					3-5 mins.	No				Too difficult for this population
MSCA: Tapping Sequence		X	X					3-5 mins.	No				Too difficult for this population
MSCA: Verbal Memory		X		X			4-8 1/2 years	3-5 mins.	No				Used in PDC evaluation
MCSA: Leg Coordination					X		4-6 1/2 years	3-5 mins.	No				
MSCA: Arm Coordination					X		2 1/2-8 1/2 years	3-5 mins.	No				Some items difficult for examiner.

TABLE 2.3 (Continued)

Tests Considered for Battery

Variables	Contents									Psychometric Variables			
Test	Factual Knowledge	Memory Skills	Cognitive Skills	Communication Skills/Oral Language	Perceptual Psychomotor Skills	Social Skills	Age Range	Length of Test	Cultural Biases	Relevant Norming Population	Validity Data	Reliability Data	Comments
MSCA: Imitative Action					X		2 1/2 - 8 1/2 years	3-5 mins.	No	Yes		Test-retest coefficients General Cognitive scale, r = .89-.91 Perceptual Performance scale, r = .78-.84 Verbal scale, r = .82-.89 Memory scale r = .79-.93 Quantitive scale, r = .89-.90 Motor scale, r = .69-.78	
MSCA: Draw A Design			X		X			5 mins.					Scoring may be difficult
MSCA: Draw A Child			X		X			3-5 mins.	No				Scoring may be difficult
MSCA: Numerical Memory		X					4- 6 1/2 years	3-5 mins.	No				Recal Digits
MSCA: Verbal Fluency			X	X			2 1/2 - 8 1/2 years	1-2 mins.	Some categories				Modified and used in PDC evaluation
MSCA: Counting and Sorting	X	X						3-5 mins.	No				
MSCA: Opposite Analogies			X	X				3-5 mins.	No				Difficult to translate into Spanish
MSCA: Conceptual Grouping	X		X	X			4- 6 1/2 years	3-5 mins.	No				
Vocabulary Test							years	10-15 minutes	white, middle-class; sexist	in one city	scores at begining of 1st grade correlated with MAT scores at end of year word knowledge r = .35 reading r = .39	(Form A and B)	
Preschool Embedded Figures Test					X		3-5 years	25 mins.			Correlates .35-.67 with WPPSI Block Design subtest	r = .74-.91 (split half) r = .69-.75 (test-retest)	Visual discrimination
Preschool Interpersonal Problem Solving Test						X	4-5 years	20-25 mins.	No; multiethnic pictures included	No; normed on inner city only	Sig. correlations with teacher rating of social adjustment	r = .86-.89 (interrater) r = .59 (test-retest)	Recommend using only first half of test; used in PDC eval.
SOMPA: Bender Visual Motor Gestalt Test					X		5-11 years	20 mins.	No	No Data	No Data	No Data	More appropriate for neurological assessments
SOMPA: Physical Dexterity Tasks					X		5-11 years	20 mins.	No	No Data	No Data	No Data	More appropriate for screening for abnormalities
Steinback Test of Reading Readiness	X	X	X	X	X		Grades K-1	40 mins.	Yes	No	?	r = .58-.94 (KR-20) r = .95 (split half)	Many items outdated
Wechsler Preschool Primary Scale of Intelligence: Block Design			X		X		4- 6 1/2 years	15-20 mins.	No	Yes	Not reported	r = .76-.98 (split half)	Used in PDC evaluation

Although the eighteen subtests are grouped to yield six scales (verbal, perceptual-performance, quantitative, general cognitive, memory and motor) we decided against grouping for the present evaluation. Not all subtests in the groups were relevant to us.

The MSCA was standardized on a representative sample of 1,032 children (stratified according to age, sex, color, geographic region, father's occupation and urban-rural residence), with the sample closely matching the 1970 census data. Reliability and validity data for the MSCA is reported by scale. Reliability for verbal memory is .93, while reliabilities of the other scales range from .79 to .88. (The reliability for the memory scale is based on test-retest data). Test-retest data for all scales was collected on a smaller sample (n=25) in three age groups. A significant degree of stability was attained, ranging from coefficients of .69 (motor scale) to .90 (general cognitive scale).

Limited validity data on the MSCA is available. On a sample of 35 children, the General Cognitive Index was found to correlate .81 with the Standard-Binet IQ and from .62 to .71 with the three Weschler Preschool and Primary Scale of Intelligence (WPPSI) IQ's.

Kaufman and Kaufman (1973) found evidence that "performance on the cognitive scales in the MSCA is not a function of color" (page 205). Using the standardization sample, Kaufman and Kaufman identified 148 black-white pairs, matched on age, sex, and father's occupation. The sample was grouped into three age categories: 2-1/2 to 3-1/2, 4 to 5-1/2, and 6-1/2 to 8-1/2. Few significant differences were observed in performance, especially on the subtests selected for use in the present evaluation. Mean differences in scores and p values are presented in Table 2.5.

As can be seen in Table 2.5, except for a significantly better performance by the oldest group of white children on the story part of Verbal Memory, all differences are in the gross motor tests. We take these findings as evidence that the MSCA is relatively culture-free, at least for the groups in the Kaufman and Kaufman (1973) investigation. The specific subtests selected for pilot testing are listed in Table 2.4. A brief description of each test and a discussion of changes made follow.

TABLE 2.4

Pilot Test Battery: Item by Element Matrix[a]

Skill Elements / Test	FACTUAL KNOWLEDGE					MEMORY SKILLS		COGNITIVE SKILLS				COMMUNICATION SKILLS/ORAL LANGUAGE					PERCEPTUAL/PSYCHOMOTOR SKILLS				
												PRODUCTION			COMPREHENSION						
	Letter Names	Number Names	Color Names	Shape Names	World Knowledge	Visual Memory	Auditory Memory	Spatial Reasoning	Classification	Numeration and Quantification	Problem Solving	Vocabulary	Creativity	Syntax	Vocabulary	Comparatives	Visual Discrimination	Auditory Discrimination	Fine Motor Skills	Gross Motor Skills	Social Skills
Conceptual Grouping			2,5,6	3,4,5,6					4,5,6,7,8,9							1,5,6					
Reading Readiness	2,4							3									1				
Number Readiness		1,3,6						4		5,7					4	2					
Basic Information			3	4	1,2,5,6,7,8																
Pictorial Memory						x						x									
Verbal Memory							x					x			x						
Opposite Analogies									x			x			x	x					
Verbal Fluency									x			x	x								
Draw-a-Child																	x		x		
Block Building								x									x		x		
Imitative Action																			x		
Leg Coordination																				x	
Arm Coordination																				x	
PIPS											x										x

[a] Item numbers are given where different items of a test pertain to different elements; an "x" indicates that all test items are relevant to the same elements.

TABLE 2.5

(adapted from Kaufman & Kaufman. 1973)

Mean Differences in Raw Scores Obtained by Blacks and Whites on the MSCA Tests. by Age[a]

Test	2 1/2 - 3 1/2	4 - 5 1/2	6 1/2 - 8 1/2
Block Building	+0.7	-0.2	-
Pictorial Memory	-0.1	-0.2	+0.1
Verbal Memory I	+0.9	-0.3	+0.5
Verbal Memory II	+0.3	+0.2	+0.9*
Leg Coordination	+0.3	-0.7*	-
Arm Coordination	-0.8	-2.3**	-1.3
Imitative Action	-0.1	-	-
Draw-a-Child	+0.9	-0.4	+0.2
Verbal Fluency	+0.8	-0.9	+1.1
Opposite Analogies	+0.8	+0.2	+0.4
Conceptual Grouping	+0.6	+0.5	+0.4

*$\underline{p}$ <.01
**$\underline{p}$ <.05

[a] Mean difference equals mean raw score of whites minus mean raw score of blacks. Some differences were not computed because the task in question was too easy for a particular age group. These are indicated by dashes.

Block Building. The child is asked to duplicate four simple structures built by the tester out of one-inch cubes. Performance is untimed and even partial success earns some credit. Block Building is used to evaluate spatial reasoning, visual discrimination, and fine motor dexterity.

Pictorial Memory. The child is shown a card which has six colored pictures of familiar objects. The tester shows the card for ten seconds, while naming the objects. The card is then removed and the child tries to recall the objects. We felt that some of the objects in the original McCarthy test (specifically, padlock and paper clip) were inappropriate for the present population. Therefore, for the pilot test, we piloted three different cards of six objects each, for a total of 18 objects. Each child still saw only one card of six objects, however. We then selected one of the three cards for use in the fall child test battery. Pictorial Memory measures the child's visual memory and productive vocabulary skills.

Verbal Memory. There are two parts of this test. Part One consists of lists of words and sentences to be repeated by the child. The first two items contain concrete concepts likely to be within the child's receptive vocabulary; the next two items contain two-syllable words which are more abstract in meaning and the last two items are full sentences. In Part Two, the examiner reads a simple short story to the child, who is then requested to retell the story. He is not expected to repeat it verbatim, so long as the essential elements or ideas are present. Verbal Memory is used to test several skills, including auditory memory and productive and receptive vocabulary.

Leg Coordination. The six items assess motor coordination of the lower extremities including walking backward, walking on tip toe, walking a straight line, standing on one foot, and skipping.

Arm Coordination. This test evaluates development of the upper extremities in three gamelike activities: ball bouncing, catching the bean bag, and aiming a bean bag at a target. The target game was deleted as to difficult for both child and tester.

Imitative Action. Four simple motor tasks allow a few more observations of the child's motor skills.

Draw-a-Child. Boys are asked to draw a boy and girls are asked to draw a girl. Human figure drawings are frequently used in clinical assessment as they provide information about the child's level of cognitive functioning as well as his personality. In this evaluation, the drawings are also useful in assessing perceptual motor development and the fine motor coordination.

Verbal Fluency. The child's productive vocabulary and ability to classify and to think categorically are measured by asking the child to think quickly of words falling into each of four categories. For the pilot test, we utilized the four categories used in the evaluation for another Head Start demonstration project, Project Developmental Continuity, conducted by the High/Scope Foundation: animals, things to eat, people's names, and toys.

Opposite Analogies. The child's productive vocabulary and ability to classify is further tested by asking the child to provide the opposite of the key word in each of nine statements (e.g., an elephant is big and a mouse is ______________).

Conceptual Grouping. The child's ability to classify and to generalize is tested with the aid of a set of twelve blocks in different shapes, sizes, and colors. Conceptual Grouping also assesses the child's factual knowledge of color and shape names. Nine problems are presented orally, with the child responding by appropriate selection, grouping, or elimination of the blocks.

BSSI Subtests Selected

The MSCA subtests were selected, not only for their appropriateness for the present evaluation, but also for the excellent statistical data available. The data available on the Basic School Skills Inventories is much more limited and less impressive. Nevertheless, the content of the three subtests selected closely parallels the preskills listed by Calfee in his concept paper in reading and writing, and by Heller and Resnick in their mathematical paper.

The BSSI was developed in such a way so as to be highly appropriate for an evaluation of preacademic skills:

> During the spring of 1971, 50 first grade and kindergarten teachers in the greater Philadelphia area were asked to describe in detail the educational and behavioral characteristics of four or five children in their classes. They were instructed to choose at least two children who were 'ready' for school and two who were 'not ready'. They were then to specify the particular skills (tasks) that the pupils could or could not do that have prompted their selection. A wide variety of children were described. The sample included children from urban, surburban, and rural residences and from both economically rich and depressed neighborhoods. Non-white pupils were included in approximately the same percentage as that in the community. An equal number of boys and girls were described. The most frequently mentioned ~~skills~~ designated by the teacher as being associated with ready and non-ready children were converted into 67 specific items. On the basis of face validity, each item was assigned to a different category of readiness: BASIC INFORMATION, SELF HELP, ORAL COMMUNICATION, HAND WRITING, READING READINESS, NUMBER READINESS, AND CLASSROOM BEHAVIOR. This collection of items comprised the first experimental form of BSSI. Only items that related directly to school performance and that were presumed to be

TABLE 2.6

Internal Consistency Coefficients for the BSSI[a]
(adapted from Goodman & Hammill, 1975)

	Four Year Olds (n = 128)	Five Year Olds (n = 161)	Six Year Olds (n = 170)
Basic Information	.76	.68	.60
Reading Readiness	.88	.86	.79
Number Readiness	.90	.87	.78

[a]All coefficients significant at *p* <.01.

TABLE 2.7

Intercorrelations among BSSI Subscales, MRT Subtests, and Teacher Ratings of Overall Readiness[a]
(adapted from Goodman & Hammill, 1975)

	BSSI Subscales		
MRT Subtests	BI	RR	NR
Word Meaning	.34	.38	.25
Listening	.30	.25	.36
Matching	.47	.57	.57
Alphabet	.56	.66	.67
Numbers	.55	.62	.66
Copying	.52	.60	.62
MRT TOTAL	.61	.70	.71
Teaching Ratings	.62	.52	.58

[a]All correlations significant at *p* < .05.

> teachable were included. For example, items related to the health of the child or to his home environment were excluded; important as these factors may be, there is little the teacher can do about them. (Goodman and Hammill, 1975)

This, and the second experimental form, were then tested and revised, and the final 84 item version of the BSSI completed.

The standardization sample of the BSSI consisted of 459 children, aged 4 to 6 years, half boys and half girls. Seventy percent of the sample were white; 22 percent were black; and 8 percent were Mexican-American. Half lived in urban areas, one-fourth in surburban and one-fourth in rural communities.

Reliability data is given in the form of internal consistency coefficients in Table 2.6. (Data will be reported here only for the three subtests selected. The remaining subtests are Self Help, Handwriting, Oral Communication and Classroom Behavior.) Despite reaching a significant level of internal consistency, several of the coefficients fall below .80, the traditionally accepted level of adequate test reliability. The authors make the point that the BSSI does differ in format from many standardized tests. "In a sense, each item of the BSSI is a test of a discrete skill, rather than an item on a test of a discrete skill." (Goodman and Hammill, 1975, p.39) This is generally true; in Basic Information, for example, the child is asked to name days of the week, the month of his birthday, identify coins, etc. Several discrete skills or areas of knowledge are being assessed within one subtest. It is reasonable that the internal consistency coefficients will be lower than that of a test in which all the items assess only one skill or area.

Test-retest data on the BSSI are very limited. White (1973) had 15 teachers score the items of the BSSI on two occassions. The percentage of items scored the same range from 87 to 98 with a mean of 96.

The validity data for the BSSI consists of correlations of scores with teacher ratings of overall readiness and with the Metropolitan Reading Test (MRT). These data are presented in Table 2.7. Guilford (1956) suggests that a coefficient of .30 denotes a useful prediction; Garrett (1954) puts the figure at .40. In either case, the BSSI subscales do correlate highly with the MRT and teacher ratings.

Predictive validity data was also collected by White (1973). She correlated preschool teacher BSSI ratings and first grade teacher ratings for 90 children. She obtained r = .46 for Basic Information, r = .64 for Reading Readiness, and r = .71 for Number Readiness.

As stated earlier, the BSSI is an informal assessment device, intended to be used by classroom teachers. For use in the present evaluation, it was necessary to write complete item instructions and design materials so that administrative procedures would be consistent across testers. Certain items also had to be deleted or rewritten as they did not meet our testing demands. A description of each subtest follows.

> Basic Information. The original subtest contains 11 items. Three items were deleted. "Can the child name any three animals, excluding dog and cat," was deleted as a child's knowledge cannot be assessed in a one or two session test. An item asking the child to differentiate between winter, summer and night time scenes was deleted as possibly culturally biased. Finally, the item asking the child to tell the tester where he lived was eliminated as ambiguous to score. The remaining items all concern "basic information" or world knowledge, such as days of the week, coin, color, and shape names, etc.
>
> Reading Readiness. We retained four of the original twelve items. All items concerning auditory discrimination (five items) were eliminated due to the difficulties in assessing correct responses among children who speak different languages or dialects. Three other items were deleted as they were difficult to assess in one session (i.e., determine the child's sight vocabulary) or difficult to score. The remaining items all concern skills known to relate to reading achievement, including knowledge of the alpahbet, word matching and an awareness of proper left to right sequence.
>
> Number Readiness. Of the original 11 items, 6 were retained. Four concern counting and/or numeration; one concerns first, second, third sequencing and one concerns verbal comparativeness (more/less, etc.). The eliminated items were deemed redundant with other items in the battery.

Preschool Interpresonal Problem Solving Test

The PIPS was the only measure of social skills we reviewed in depth. Examinations of other tests quickly showed that the PIPS is clearly the most well-designed and appropriate measure of social skills available. The test is appropriate in that social problem solving ability which the PIPS measures

> "has prehaps the clearest relation to what is commonly thought of as social competence, and is integral to Bronson's definition of social

> executive skills, which she saw as 'the ability to control and direct oneself adequately and constructively in social situations and the ability to influence others effectively in socially approved ways.' (1975). It does not imply mere compliance, but rather the effective use of coping strategies. A member of the High/Scope PDC Advisory Panel, Charles Billings, stressed the importance of this category, emphasizing that the child's learning to control his or her environment and to influence others was an essential component of social competence and a necessary precursor to the development of social and political power, the knowledgeable use of which are vital for effective functioning in a democracy." (Love, Wacker, & Meece, 1975, p.23)

The PIPS was designed to test a child's ability to solve real life problems. The instrument is included here as it fulfills the need for a measure of problem solving and also provides us with some information on the child's social skills. Although the original test has two parts, one involving ways for a child to obtain a toy from another child and the other concerning ways to avoid mother's anger when the child has broken something, only the child's toy situation was used here. The original test is far too long for our needs and for the attention span of the children in this investigation. Also, according to the Rand report, the first half of the test "is eminantly suited for assessing the extent to which Head Start increases prosocial behavior alternatives." (Raisen, et.al., 1974). Responses are scored according both to the number of solutions the child offers to a problem as well as the total number of different solution categories.

The difficulty with many measures of social skills (other than observational measures) is that they may actually assess the child's test taking skills or level of intellectual functioning, rather than social skills. An earlier study by Shure, Spivak and Jaeger (1971) found evidence that this is not true of the PIPS. They collected data on both the classroom behavior and PIPS performance of 62 four-year old Head Start children. They found that, regardless of sex and intellectual functioning, "those who are better adjusted in social behavior as measured are those who can conceptualize the greater variety of ways to handle interpersonal problems" (p.1799). Also, although the two behavioral groups (labeled "aberrant" and "nonabberant") differed significantly in the total number of solutions given on the PIPS, there was no difference between the two groups in mean IQ, as measured by the Peabody Picture Vocabulary Test.

Fall Test Battery

The Pilot Test data were examined primarily to eliminate tests and/or items which the testers found problematic to administer as well as to calculate p values for proper ordering of items within tests. Budget constraints prevented further analysis prior to finalizing plans for the fall test battery. At the time these decisions were being made, it also became necessary to consider reducing the size of the battery for budget purposes. The pilot battery required two 30 to 45 minute sessions to administer. In mid-July, the decision was made to reduce the battery so that it could be administered within one 45 to 60 minute session, with play breaks during the session. It should be noted that NTS would not have recommended reducing the testing battery to this extent without such budgetary pressure.

The method of questioning and the nature of the required response for each item of the measures used in the fall 1979 test battery are shown in Figure 2.1.

Test and Item Modification

Most item modifications were minor administrative changes which will not be discussed here; the Fall Battery Test Booklet (Appendix A) contains all changes. Two items in the pilot battery used multiple stimuli; the resulting data, as well as testers' reports, were used to make decisions on which stimuli to use in the fall battery. Specifically, Reading Readiness, Item 3, asks the child to place three cards in sequence after seeing an example completed by the tester. One of two card sequences were used (one sequence depicted an apple whole, half eaten, and as a core; the second sequence was of a glass of water being poured). The pouring sequence was discarded as it was somewhat ambiguous and the apple sequence retained. In Pictorial Memory, the child is shown a set of six pictures and then asked to recall them. There was some question about the cultural relevance of the six pictures contained in the original MSCA version. Three sets were designed and used in the pilot version. The data were examined in order to select six (out of the 18) pictures, all of which had been recalled about 50 percent of the time. The resulting set is listed in Pictorial Memory in Appendix A.

Other changes, which did not involve changed materials, include reverting back to McCarthy's original version (rather than High/Scope's) for Verbal

Figure 2.1. Description of Items on Child Measures in Terms of Methods of Questioning and the Nature of the Required Response

Measure, Item*	Method of Questioning	Nature of Required Response
Block Building, 1	Verbal + Props	Manipulation/Movement of Objects
Block Building, 2	Verbal + Props	Manipulation/Movement of Objects
Block Building, 3	Verbal + Props	Manipulation/Movement of Objects
Block Building, 4	Verbal + Props	Manipulation/Movement of Objects
Basic Information, 1	Verbal	Verbal
Basic Information, 2	Verbal	Point to self
Basic Information, 3	Verbal + Props	Verbal
Basic Information, 4	Verbal	Verbal
Basic Information, 5	Verbal + Props	Point to object
Basic Information, 6	Verbal + Props	Point to picture
Basic Information, 7	Verbal	Move correct hand
Basic Information, 8	Verbal	Verbal
Number Readiness, 1	Verbal	Verbal
Number Readiness, 2	Verbal + Props	Point to picture, or verbal
Number Readiness, 3	Verbal + Props	Verbal
Number Readiness, 4	Verbal + Props	Verbal
Number Readiness, 5	Verbal + Props	Point to picture
Number Readiness, 6	Verbal + Props	Point to number
Verbal Memory, 1	Verbal	Verbal
Verbal Memory, 2	Verbal	Verbal
Verbal Memory, 3	Verbal	Verbal
Verbal Memory, 4	Verbal	Verbal
Verbal Memory, 5	Verbal	Verbal
Verbal Memory, 6	Verbal	Verbal
Preschool Interpersonal Problem Solving Tasks	Verbal + Props	Verbal
Conceptual Grouping, 1	Verbal + Props	Pick up and place objects
Conceptual Grouping, 2	Verbal + Props	Pick up and place objects
Conceptual Grouping, 3	Verbal + Props	Pick up and place objects
Conceptual Grouping, 4	Verbal + Props	Pick up and place objects
Conceptual Grouping, 5	Verbal + Props	Pick up and place objects
Conceptual Grouping, 6	Verbal + Props	Point or pick up objects
Conceptual Grouping, 7	Verbal + Props	Point or pick up objects
Conceptual Grouping, 8	Verbal + Props	Pick up and place objects
Conceptual Grouping, 9	Verbal + Props	Pick up and place objects
Reading Readiness, 1	Verbal + Props	Point to word
Reading Readiness, 2	Verbal + Props	Verbal
Reading Readiness, 3	Verbal + Props	Move pictures
Reading Readiness, 4	Verbal	Verbal
Verbal Fluency, 1	Verbal	Verbal
Verbal Fluency, 2	Verbal	Verbal
Verbal Fluency, 3	Verbal	Verbal
Verbal Fluency, 4	Verbal	Verbal
Pictorial Memory	Verbal + Prop	Verbal
Draw-A-Child	Verbal	Draw
Child Rating Scale	None	None for child; rating by tester

*Measures and items are presented in the order given in the fall 1979 testing battery.

Fluency. The Fall Battery Categories include things to eat, animals, things to wear, and things to ride. During the Pilot Test, we found that people's names and toys were very difficult to score. Names vary greatly by cultural groups; nearly any object could be considered a toy by a child.

The scoring of Item 2 (build the chair) of Block Building was modified to make scoring of it equivalent to Item 3 (four-block building). Finally, Item 6 (print numbers) was deleted from Number Readiness as there was considerable doubt that such a skill is considered appropriate for the Head Start curriculum.

The other major changes are deletions of entire tests. Imitative Action was eliminated on the basis of minimal information yield. It was clearly too easy. It had originally been included primarily as a brief play break; we determined that it was not necessary as such. The story (Part Two of Verbal Memory) was eliminated for the following reasons: (1) to shorten the battery, (2) it proved too difficult and therefore discouraging for many children, and (3) testers found it difficult, if not impossible, to accurately record the child's response verbatim. Leg Coordination and Arm Coordination were eliminated as the assessment of gross motor skills was felt to be less important than the assessment of preacademic skills. These two tests also required considerable time, equipment, and training for testers. The resulting data would not be sufficiently valuable to offset the costs of collecting them. Finally Opposite Analogies was deleted as many of the items were judged to be poorly designed, specifically the last three (Numbers 7, 8, and 9). Also, all elements relevant to Opposite Analogies are covered by other tests in the Fall Battery.

The deleted tests are also the only MSCA subtests on which black-white differences were found by Kaufman and Kaufman 1973 (see Table 2.5). The resulting battery is as culturally "clean" as possible without further pilot testing.

A note must be made concerning the inclusion of Conceptual Grouping in the battery. High/Scope found this test unacceptable in their PDC evaluation in terms of reliability (internal consistency) for both English and Spanish speaking children (Granville et al., 1976). However, the High/Scope sample size for this test was very small (n = 92) for this measure. The measure does seem sufficiently valuable to include here despite the High/Scope decision.

Three-Year-Old Battery

Discussion with the testers also revealed that the three-year olds tested in the pilot effort had considerable difficulty with certain items as well as attention span problems. The battery was further shortened for three-year olds: Reading Readiness was entirely eliminated, as very few three-year olds were successful on any items; and only the first two items of Number Readiness were retained for these children. The result of these changes is that there are no items requiring letter or number knowledge in the three-year old battery.

Assessment of Language Dominance

Procedures to select an instrument to assess language dominance of bilingual children were very similar to those followed to select the rest of the battery. The criteria were somewhat different, however, and no language dominance measures were used in the Pilot Test. Table 2.8 contains a list of the eight measures considered, as well as a summary of the data on each.

It is essential that any test of language dominance be culture fair both in terms of content and scoring of syntax. In terms of the present evaluation, this means that the test must be appropriate for Spanish-speaking children in California, Texas, New Mexico and Chicago. Several measures were questionable or clearly did not meet this criterion. The test must be reasonably short for reasons given earlier. The test should also assess language structure, not just vocabulary. Finally, the test should preferably be administered to both English and Spanish-speaking groups, to equate the batteries.

Despite our plan to use the Bilingual Syntax Measure in the Fall Battery, it was not included in the final version. The materials for use with parents (primarily permission forms) were judged to be unacceptable in their Spanish version. As a result, testing in the one site which served predominantly Spanish-speaking families did not take place. For future use of the BSM, we do recommend that the scoring procedures be redesigned with the aid of linguists from appropriate fields of study, as we find the published scoring methods unacceptable.

Table 2.8

Review of Measures and Language Dominance

LANGUAGE DOMINANCE

Test Name	Target Groups		Length of Test	Criterion Grades[2]			
	Ethnicity	Age		Measurement Validity	Examinee Appropriateness	Technical Excellence	Administrative Usability
Bilingual Syntax Measure	Mexican-American, Cuban, Puerto Rican[1]	Grades K - 2	10 min.	P	G	P	F
Crane Oral Dominance Test	Mexican-American, Cuban, Puerto Rican	Grades K - 3	20 min.	—	—	—	—
James Language Dominance Test	Mexican-American[1]	Grades K - 1	7-10 min.	F	G	F	F
Language Dominance Criteria	Unspecified other than Spanish-speaking[1]	Grades K - 2	10-15 min.	P	F	P	P
Oral Language Dominance Measure	Unspecified other than Spanish-speaking[1]	Grades K - 3	14 min.	P	G	P	P
The Pictorial Test of Biligualism and Language Dominance	Unspecified other than Spanish-speaking	Ages 4 - 8	Part I-15 min. (vocabulary) Part II (describe picture)- unspecified (10 min.)	F/P	G/F	F/P	F/P
Spanish/English Dominance Assessment	Unspecified other than Spanish-speaking[1]	Grades 1 - 2	10 min.	—	—	—	—
Test of Language Dominance (TOLD) Spanish Version	Mexican-American	Grades K - 2	25 min.	—	—	—	—

Table 2.8 (Continued)

Review of Measures and Language Dominance

LANGUAGE DOMINANCE

Test Name	Psychometric Variables			Comments
	Validity	Reliability	Norms	
Bilingual Syntax Measure	Construct validity supported by evidence that the BSM classifications reflect the relationships expected to be found among bilingual children.	Test-retest (Kappa coefficient) = .62 for BMS-E; .54 for BMS-S. Interrater (Kappa) = .78 and .64	Norms on 2300 English-speaking and 2000 Spanish-speaking children are available from publisher	Assesses syntax. Authors' scoring method scores "Black English" as ungrammatical.
Crane Oral Dominance Test	Author cities a predictive validity coefficient of .87	Author cites odd-even reliability of .86	None	Assesses vocabulary only. Reviewers felt that test might be too taxing for 4 year olds.[3]
James Language Dominance Test	Data somewhat unclear. Content and construct validity judged good; concurrent and predictive, poor[2]	Test-retest for 1st graders (approximately 100) over 6 months - Classifications were in 98% agreement.	Based on 464 Mexican American children in Texas	Provisions are made for possible dialectal or phonological variables. Scored for comprehension and production.
Language Dominance Criteria	No data	No data	No data	Accurate scoring requires a bilingual person trained in linguistics.[3]
Oral Language Dominance Measure	No data	No stats. Test has been used for 3 years in grades K-3 in El Paso school system; claimed to yield reliable results.	No data	Scored on language structure.
The Pictorial Test of Bilingualism and Language Dominance	High concurrent validity for English scores, low for Spanish scores (vocabulary). Correlations of teacher ratings and scores on Part I-.52 Spanish .85 English.	Odd-even reliability-.85 English, .89 Spanish; Test-retest reliabilities high for 2 mos. - .69-.96 lower over 6 mos. - .35-.82	Part I: 468 Mexican-American children, preschool-2nd grade. All from south Texas. Part II - n=200	Scored on vocabulary, grammar, and thought completion. Requires some subjective judgments.
Spanish/English Dominance Assessment	No data	No data	No data	Two people needed to administer test.
Test of Language Dominance (TOLD) Spanish Version	No stats. but items selected on basis of item analysis from existing instruments.	Based on n of 96. KR-20 for items presented in English = .82. KR-20 for items presented in Spanish = [illegible]	No data	Assess primarily vocabulary.

[1] in addition to English-speaking groups.

[2] Oral language tests for bilingual students

[3] A guide to assessment instruments for limited English-Speaking students.

CHAPTER 3

CHILD DATA COLLECTION

This chapter summarizes the collection of fall child test data in 1979, beginning with the assignment of children to groups and continuing through the management of the enormous volume of data. The reader is referred to Project Reports 9 and 10 for more detailed treatments of these topics. The results of data collection and analysis appear in Chapter 4.

Assignment of Children to Groups

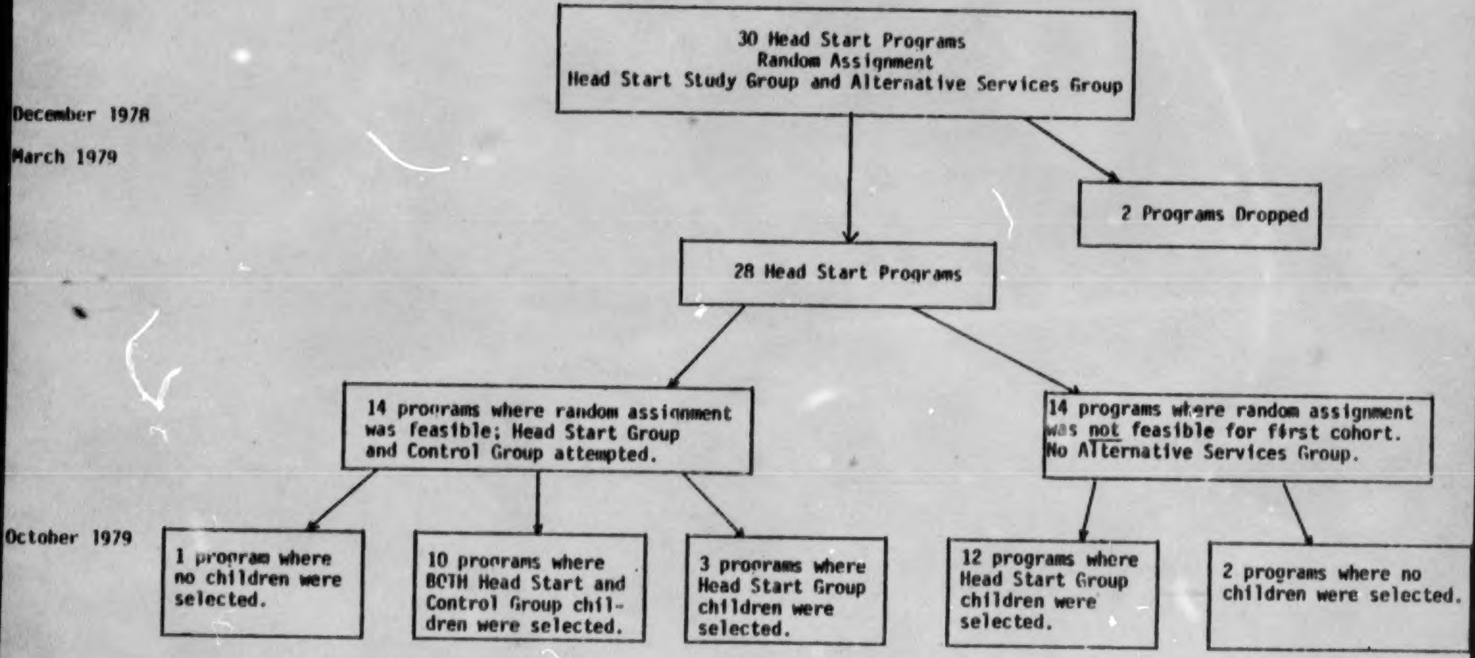
The evaluation design calls for the formation of three groups of sample children/families: (1) participants in regular Head Start programs, (2) children eligible for but not participating in Head Start, and (3) participants in BES Head Start programs. Though the above seems to be a fairly straightforward statement, its implementation was, in practice, very complicated. Though we have tried to simplify the following discussion as much as possible, we are aware that the reader may find it anything but simple.

Of the 28 randomly selected Head Start programs which had agreed to participate in the evaluation as of May 1979, evaluation groups were formed in 25 sites in October 1979, as further explained below and depicted in Figure 3.1. (Three sites had no such groups formed; one site asked for a one-year delay in participation; a teacher strike in another precluded both testing and the formation of groups; and a third was excluded from this round of data collection due to the insufficient evaluation resources at that point in time for preparing parent materials in Spanish).

Of the 25 Head Start sites, then, where at least one evaluation group was formed, random assignment (to Head Start and control groups) was attempted in

Figure 3.1
Schematic Presentation of Selection
of Children into Groups in the Regular
Head Start Sites

Original Design


30 Head Start Programs
Random Assignment
Head Start Study Group and Alternative Services Group
December 1978
March 1979
2 Programs Dropped
28 Head Start Programs
14 programs where random assignment was feasible; Head Start Group and Control Group attempted.
14 programs where random assignment was not feasible for first cohort. No Alternative Services Group.
October 1979
1 program where no children were selected.
10 programs where BOTH Head Start and Control Group children were selected.
3 programs where Head Start Group children were selected.
12 programs where Head Start Group children were selected.
2 programs where no children were selected.

13.[1] No control group was recruited in the other 12 sites. Though a control group as well as a Head Start group was anticipated within each of the 13 random assignment-attempt sites, a control group was achieved in only 10. Lack of sufficient program applicants, despite intensive recruiting efforts, precluded the formation of a control group in three sites (see Figure 3.1). Therefore, there were 10 sites with both Head Start and control groups, and 15 sites with Head Start groups only.

Sites With Head Start and Control Groups

The ten sites in which there were both Head Start and control groups[2] are further divided into two categories. Within seven of them, random assignment was achieved. In another three of the sites, random assignment was not achieved, but alternative methods of composing comparison groups were tried out.

In the seven sites where random assignment occurred, the procedure was as follows:

- An on-site NTS evaluation staff member obtained necessary information from the program regarding each of the program's centers: the number of classes in the center; the number of children of each age group (threes, fours, and fives) the center planned to serve (if the program felt strongly about maintaining these numbers within age groups); and the number of "must serves" in each center the program could anticipate identifying.
- The above information was transmitted to the NTS office, and pairs of centers[3] were randomly selected within each program until a sufficient number of centers had been selected to provide at least 60 spaces which would not be filled with "must serve" children.

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[1] These procedures were for the first cohort only; many more sites would have attempted random assignment for the second cohort, in 1980.

[2] Control groups are also referred to in this study as "Alternative Services Groups," or ASGs.

[3] Pairs were sampled, rather than single centers, in order to assure that at least two centers per site were selected (if more than one was available). This was for the purpose of estimating between-center variance independent of between-site variance.

- The on-site NTS staff member obtained from the program a list of all program applicants, along with information regarding age (if selection within age was necessary in that program) and "must serve" status. This information was transmitted to NTS.

- If necessary, and if asked to do so by the program, the on-site NTS person helped with recruitment in order to obtain a list of program applicants for the selected centers which exceeded the non-must-serve capacity of the centers by at least 60 children.

- If at least 10 applicants more than capacity were identified, random assignment proceeded; if not, random assignment did not proceed, the program used its regular selection procedures for entry into the program, and children were randomly selected from the identified centers for the Head Start Group.

- This evaluation did not reduce the number of children served by a program. If there were not enough surplus applicants to form an ASG of at least 60 children, then the ASG was smaller, not the program.

- In six of the seven random assignment sites, assignment was done by computer, using a random number generation program. In the other site, assignment took place on site, done by an NTS senior staff member using a table of random numbers.

- Once the two groups were identified, the children selected for the Head Start program were notified and enrolled. Parents of the control group children were contacted, told about the study, and asked to participate.

In three sites (of six where random assignment was tried but unsuccessful), NTS developed two experimental approaches for forming non-random control groups. In two of the three sites, a "day care" procedure was tried. This was accomplished by contacting day care centers within the same catchment area as the Head Start program. With the center's permission, children were identified who were likely to be eligible for Head Start. From this list NTS randomly selected 60 children to contact. Parents of these children were contacted, their potential eligibility for Head Start was verified, and they were asked to participate.

In a final site, though there were sufficient applicants to the program to have permitted random assignment, mis-communication between ACYF, NTS and the program resulted in the program's proceeding with enrollment before random assignment could be accomplished. A "waiting list" method of forming a control group was used in this site; 60 children were randomly selected from the waiting list for Head Start and their parents were asked to participate in the study (as members of the control group). In the future, the waiting list procedure may be a viable procedure, in a site where the program strenuously objects to random assignment.

Sites With No Control Group

In 15 Head Start communities the first cohort consisted of Head Start children only; there were no control groups. In twelve of these, a decision had been made by May 1979 not to attempt random assignment in 1979 (see footnote 1, above). In the additional three sites, random assignment was tried but was not successful due to insufficient numbers of program applicants.[4] In each of these 15 sites 60 Head Start children were selected for participation in the program in the following manner:

- NTS obtained from each Head Start program a description of the centers operated as part of that program, including the number of children attending classes in each center.
- NTS then randomly selected pairs of centers (see footnote 3 above) until the centers selected served at least 60 children in total, or until all centers had been selected.
- Once Head Start classes opened in September, an on-site NTS employee obtained from the program a list of all children enrolled in the selected centers. This information was transmitted to NTS.
- NTS randomly selected 60 children from these lists in each site, or the maximum number in the program, if less than 60.
- The NTS on-site employee then contacted the program and the children's parents, asking the parents to participate in the study.

Summary of Child Selection in the Head Start Sites

Table 3.1 summarizes the numbers of children selected in Head Start and control groups in each of the 25 Head Start communities, a total of 1429 Head Start and 540 control group children.

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[4] The "Day Care" method of obtaining a comparison group, discussed above, or other alternatives might be successful in those sites; but none were tried.

Table 3.1.

Sample Sizes Within Each Head Start Site

Site ID	Number of Children Selected for Head Start Group	Number of Children Selected for ASG (Control Group)
118	59	none
119	none	none (delayed participation)
120	60	none
121	60	61 ("Day Care")
122	42	58
123	50	none
124	53	17
125	61	45
126	55	none
130	60	none
131	60	40 ("Day Care")
132	60	54 ("waiting list")
133	60	none
134	59	77
135	45	67
136	60	none
137	58	60
138	50	61
139	61	none
140	59	none
141	60	none
142	none	none (Spanish-speaking)
143	none	none (delayed participation)
145	59	none
146	59	none
147	59	none
148	60	none
149	60	none
TOTAL	1429	540

Child Selection in BES Sites

For this initial cohort, the design specified a sample size of 15 children in each BES site. (BES sample size for future cohorts will be 60 children per BES site). Each BES program serves at least 60 children. The selection of 15 children in each program to be included in the first cohort was accomplished as follows:

- If a BES program operated in more than one center per site, one center was randomly selected as the focal center. If there was only one center in a program, that center was automatically chosen.
- Within the one chosen center, 15 children and five alternates were randomly selected from the class roster sent to NTS by each program.
- NTS notified the BES programs of the children selected and asked the BES program manager to contact parents of the 15 children and obtain written permission for the family's participation in the evaluation. Only if a child had withdrawn from the program or if her/his parents refused permission were the alternates to be contacted. There were two such refusals (one in each of two sites). A total of thirteen children had moved away and/or withdrawn from the programs. By drawing on alternates when necessary, each BES program arranged for the participation of 15 children.

Data Collection: Regular Head Start Sites

Field Staff Procedures

The complexity of the data collection effort in these 25 communities required a five-level field staff hierarchy, as illustrated in Figure 3.2. The Director of Field Operations, Regional Field Directors, and Field Supervisors were all NTS staff. The Field Supervisors were directly responsible for the local site personnel, including the Study Coordinator/Lead Local Data Collectors and Local Data Collectors.[5]

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[5] All sites had at least two on-site employees, a lead person and one or two junior persons. The lead person was referred to as a Study Coordinator in some sites and as a Lead Local Data Collector in others.

Director of Field Operations
↓
3 Regional Field Directors
↓
10 Field Supervisors
↓
20 Study Coordinators
↓
5 Lead Local Data Collectors
↓
31 Local Data Collectors

Figure 3.2
Field Staff Hierarchy

The Study Coordinators were community residents hired in the spring of 1979 to serve as liaisons between NTS and the individual Head Start Programs, as well as to administer child tests. The Lead Local Data Collectors and Local Data Collectors were hired in August, 1979, to assist in obtaining parental permission and collecting child test data.

Training of the data collectors took place in October, 1979. Data collectors were divided into three groups for ease of training. Each training conference was five full days in length and covered two general topics: (1) child test administration and (2) field procedures. NTS staff who had administered the child test battery for the pilot test developed the training materials and conducted the child testing portion of the training conference. The Regional Field Supervisors developed and conducted training on field procedures.[6]

Child Test Administration

On October 22, 1979, the Study Coordinators and Local Data Collectors began Fall data collection. Data collection took place during seven weeks

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[6] See Project Reports 9 and 10 for a full description of NTS and site staff training activities and responsibilities.

(October 22 through December 7). During those weeks, the local field staff were responsible for: (1) contacting Head Start and non-Head Start parents and obtaining permission to test their child; (2) completing the Child Data Form for each child in the sample; (3) scheduling the child tests; (4) administering the child tests; and (5) transmitting the data to NTS.

All tests were administered in Head Start centers. Although we had originally planned to use a neutral testing location, the logistics, cost, and legal implications of transporting children were overwhelming.

Scheduling the tests. On-site staff scheduled child tests as they received parent permission. In most sites, the children were tested during the Head Start day. Therefore, the Study Coordinator or Local Data Collector scheduled the testing session for each Head Start child with the Head Start teacher. The tests were scheduled so that they would not conflict with meal or snack times or with nap time. This constrained the number of tests possible on any one day; often there were only two or three hours during each day in which testing could occur. However, it assured that the children could perform at their optimum level. In some sites, the children were tested outside of the Head Start class day; then the Study Coordinator or Local Data Collector arranged the scheduled testing with the parents. The Study Coordinators scheduled control and Head Start children for testing at the same times of the day and during the same weeks throughout the study.

Monitoring child tests. Before the full scheduling of child tests was implemented, Study Coordinators and Local Data Collectors had been told to plan at least two testing sessions to occur the second week after they returned from training. NTS staff members who had trained them on testing procedures made site visits to their programs at that time to monitor the administration of the tests in real testing situations to assure that administration was occurring in a uniform manner. In addition to the monitoring trips by NTS-Durham staff, the on-site staff monitored each other at least once a week, observing at least one test per week given by their partner at the site.

Administering the Tests. Each child in the study was tested in an individually-administered testing session, lasting approximately 45 minutes. The testing session was divided into two portions with a five-minute break between. The tester administered the test battery in a prescribed fashion in a set order of administration. After each testing session the tester rechecked the test battery booklet before sending it to NTS for scoring.

Data Collection: Basic Educational Skills Sites

Data collection in the BES programs in the fall of 1979 consisted of the administration of the child test battery to a maximum of 15 children in each of 11 internal BES projects. Testing was not conducted in two additional BES programs, which serve predominantly Spanish-speaking families. Although the child test battery itself has been successfully translated into Spanish, the materials for use with parents were not acceptable in their Spanish version. The planning phase for the data collection effort in the 11 BES programs began in early September. Actual testing took place between November 1 and December 3. Funding limitations, as well as the design specification of only 15 test administrations per BES site, resulted in the decision to send NTS staff to BES programs to collect all child test data, rather than hiring, training, and monitoring a local data collector.

A Durham-based NTS Field Supervisor was assigned to test in each of the internal BES projects. These Field Supervisors were the NTS staff who had pilot tested the child tests in the summer and who had trained the Head Start site Local Data Collectors on the administration of the child tests. The Field Supervisor's responsibilities prior to the BES child testing visit included obtaining a complete list of all BES children in the program by center, assigning identification numbers to the children, randomly selecting one center at each site in which to test and randomly choosing 20 children from within those selected centers for testing (15 children for testing and five for an alternates list). Once these 15 children were identified, parent permission was obtained and a Child Data Form was completed for each child by the BES program, including the identification of the child's teacher(s).

Testing in each program was completed within a five-day period. All arrangements for the testing were completed prior to the test period. Before the NTS Field Supervisor arrived on site, (s)he arranged and/or confirmed a testing location, confirmed that there was parent permission for each child's participation and obtained a detailed schedule for each day's testing. Once on site, the staff member verified each required permission form, completed any information on the Child Data Form which was missing and conducted individual 45-minute test sessions with each of the 15 children. The BES Program Managers assisted the NTS staff via telephone and correspondence in all phases of testing logistics prior to and during the testing visit.

Data Management

Data Receipt Control System

For both Head Start and BES sites, a computer printout which lists the study group children by identification number within programs was used as the Receipt Control System. When a package arrived at NTS, its contents were inventoried and the status of the package was documented on the printout. The printout was in order by Child ID with program, so that the status of a given childs' package could be made readily available to the Field Operations staff. A completed participant package contained a Child Test Booklet, a Parent Participation Statement, a Parent Permission Form, and a Child Data Form. The Field Supervisor was notified immediately if an incomplete package was received. A nonparticipant package required the Child Data Form only.

Data Edit

In October 1979, a Data Receipt and Edit Manual was prepared. Two senior staff members, who had assisted in the development of the Child Tests, trained the Data Manager, a research assistant and two editors on the edit procedures. In order to have consistency in the resolution of problems, a Field Supervisor, trained in the administration of the Child Tests, was responsible for documenting and resolving all problems not covered in the edit manual. A rate of six Child Test Booklets edited per hour per editor was attained.

Quality Control

During the first week of editing, 100 percent of each editor's work received a 100 percent re-edit. The second week of 20 percent sample of each editor's work was re-edited, and thereafter a 10 percent sample was selected. Problems discovered during the edit were reviewed with the editor.

Child Test Review

The Field Supervisors assigned to a particular site had also been involved in training the field staff on the administration of the Child Tests and had extensive experience in administering the Child Tests. Because of their expertise, they were also responsible for weekly review of two Child Test Booklets received at NTS for each tester. Once the review was completed, the tester was contacted and the two Child Test Booklets were discussed. This provided immediate feedback to the tester and also provided the tester the opportunity to discuss problems or concerns he/she might have.

Document Control

Upon completion of the edit, the Child Test Booklet was assigned to a batch, with a maximum of 20 child Test Booklets assigned to a batch. Each batch is stored in a secure document control area. Once an instrument is batched, it can never be removed from its assigned batch. In order to review an instrument, the entire batch must be signed out. When the batch is returned, the ID number of each instrument is verified against the original list of batch ID numbers.

Codebooks

In October, a Child Test Codebook was developed. The Codebook defined and named each variable, specified the field length for data entry, and range and consistency checks. In addition, the Codebook documented the specifications for the computer edit and scoring.

CHAPTER 4

DESCRIPTION AND COMPARISON OF THE EVALUATION GROUPS: HEAD START, BES, AND ALTERNATIVE SERVICES SAMPLES

In October through December of 1979, data were collected by NTS Research Corporation on the first cohort of children participating in the National Evaluation of Head Start Educational Services and the Basic Educational Skills Initiative.[1] This cohort consisted of 1164 children. The data were to serve three main purposes: to establish the equivalence of three evaluation groups, to further investigate the characteristics of the measures[2], and to establish baseline scores for this cohort.[3]

Evaluation Groups Within Sites

The evaluation design, described in Chapter 1, involves three groups of children and their families: children who attend a BES demonstration Head Start program, children who attend a regular (non-BES) Head Start program, and children eligible for Head Start but who do not attend a Head Start program.

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[1] The evaluation contract ended temporarily immediately following the fall pretesting and therefore this report was not written at that time.

[2] The measures were previously pilot tested and subjected to generalizability analyses; see Project Report 8.

[3] Though this purpose was fulfilled, it now appears unlikely that the evaluation will continue; if the evaluation does continue, it is unlikely that this cohort will be retained since too much time will have elapsed since the pretest.

The plan for the location of these groups within communities (sites) specified that the regular Head Start group (HS Group) and the non-Head Start group (control, or ASG Group) would be drawn from within the same thirty communities and that the assignment of the children to Head Start or non-Head Start groups would be random, if possible. The plan further specified that the BES Head Start programs (and hence the BES Group) would be located within up to 30 other Head Start communities. There would be no comparison groups within the BES communities. Project Reports 9 and 10 detailed the interactions of the NTS and ACYF evaluation staffs with the 30 Head Start programs and the initial BES programs; those reports also described the recruitment of children for the evaluation groups.

At the end of the first 12 months of the evaluation project (October 1, 1979), eleven of the then 29 BES programs[4] and 25 of the 30 regular Head Start programs were included in the child data collection activities. It was expected at that time that all BES programs and 28 of the regular Head Start programs would participate in data collection by the fall of 1980.

BES Group

Fifteen children attending each of the 11 BES programs were selected to participate in the evaluation and parental permission to test the children was obtained. Of these 165 children, 152 were administered the pretest battery; illness and scheduling problems prevented testing the remaining 13 children.

Head Start Group

Within each of 25 regular Head Start programs, up to 60 Head Start children were selected to participate in the evaluation; 813 children were tested within this group. In one of these sites, though both Head Start and control groups were formed, only control group children were eventually tested. Due to financial problems, that program was unable to begin operations that fall prior to the completion of testing.

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[4] As of September 1979, there were 13 "internal" BES programs, continuing for their second year, and 16 newly funded "external" BES programs. The 16 new programs were not involved in testing since they were funded only a few weeks prior to testing. The two bilingual continuing programs also were not involved in 1979 testing, as explained elsewhere in this report.

Alternative Services Group

The non-Head Start comparison group is referred to as the "Alternative Services Group;" in return for their parents' agreement to participate in the evaluation, the children in this group were offered Head Start Dental Services. It was possible to constitute an ASG in ten sites, as discussed in Chapter 3, for the 1979-80 program year.[5] However, testing problems resulted in the loss of test data on ASG children in one of these sites. (NTS staff suspected falsified tests; none of the data from this site was used). In two other sites, all children in the control group were admitted to Head Start before the end of the testing period. (When vacancies occurred in a program, the program admitted children from a waiting list rather than from the ASG, if such a waiting list existed. Otherwise, new enrollees came from the ASG list--depleting that list). Therefore, a total of 199 ASG children were tested in seven sites.

The location of tested evaluation groups within sites is summarized in Figure 4.1.

Figure 4.1. Location of Tested Evaluation Groups Within Sites

11 BES COMMUNITIES	25 HEAD START COMMUNITIES
152 BES GROUP children were tested within 11 BES communities	813 HEAD START GROUP children were tested within 24 Head Start communities
	199 ASG GROUP children were tested within 7 Head Start communities
	Six communities had both HEAD START AND ASG GROUPS within them: Head Start Group = 216 ASG Group = 142

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[5] The reasons for this small a proportion of sites having an ASG group for this cohort were discussed in Chapter 3 of this report and were detailed in Project Reports 9 and 10.

Characteristics of the Children in the Evaluation Cohort

Age of Children

The ages of the children in the cohort reflect the ages of children served by the Head Start programs in their communities. Tables 4.1 and 4.2[6] display the ages of the children in six-month intervals--for the total sample, by groups, and by groups within sites. As can be seen in Tables 4.1 (Table 4-A, below) and 4.2, the majority (77.2%) of the 1164 children in the three groups were between 43 and 60 months of age.

The mean age of all children tested was 4.3 years (Table 4-B). Twelve percent were younger than 43 months and less than twelve percent were older than 60 months.

As expected, the mean age of children in BES programs was significantly higher than the mean ages of both the Head Start and the ASG children (Table 4-B). BES programs were required by the BES Program Guidelines to serve primarily four-year-old children. Regular Head Start programs may serve a wider age range. While it is not unusual for Head Start programs to serve threes, fours, and five-year-olds, the non-BES Head Start programs in this study tend to serve mostly threes and fours, therefore resulting in a mean age lower than that in BES.

Though there was also a significant age difference between the overall Head Start and ASG Groups, this difference too can be satisfactorily explained. A difference between the overall groups is not surprising since in only six sites did we have both Head Start and ASG Groups in numbers large enough to analyze. Indeed, within four of those sites, the two groups were equivalent with regard to age. However, there were two sites in which the mean ages of the two groups were significantly different. As we investigated possible causes of these age differences, we discovered a major problem with site 135. Random assignment did occur in this site. As was true in all sites where an ASG was constituted, the program was free to enroll ASG children in Head Start if vacancies in the program occurred and if no other waiting list

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[6] Tables 4.1 through 4.24 are at the end of the chapter. Tables identified by letters appear within the text and are duplicates of selected numbered tables.

Table 4-A. Number of Children Tested In Each Age Level For Entire Sample And By Groups

NUMBER AND PERCENT OF CHILDREN IN EACH AGE LEVEL

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
ENTIRE SAMPLE	1 -	9 0.77	132 11.34	183 15.72	345 29.64	360 30.93	103 8.85	28 2.41	4 0.34	1164
BES	1 -	0 0.00	0 0.00	3 1.97	46 30.26	80 52.63	23 15.13	0 0.00	0 0.00	152
HEAD START	0 -	4 0.49	87 10.70	126 15.50	253 31.12	244 30.01	71 8.73	25 3.08	3 0.37	813
ALTERNATIVE SERV	0 -	5 2.15	45 22.61	54 27.14	46 23.12	36 18.90	9 4.52	3 1.51	1 0.50	199

This table appears as Table 4.1 in table section.

Table 4-B. Comparison of Mean Child Age in Years Between Groups, Overall and Within Sites[1]

		N	Mean Age	Standard Deviation	*t* and Significance	Contrast
Entire Sample		1163	4.34	.62		
BES Children		152	4.67	.33	6.12 [b]	BES/HS
HS Children		813	4.36	.62	6.64 [b]	HS/ASG
ASG Children		199	4.03	.66	11.01 [b]	BES/ASG
Site 121	HS	38	4.31	.48	2.37 [a]	HS/ASG
	ASG	45	4.04	.53		
Site 122R	HS	37	4.12	.56	.19	HS/ASG
	ASG	2	4.03	.97		
Site 131	HS	39	4.22	.65	.09	HS/ASG
	ASG	45	4.13	.51		
Site 132	HS	58	4.42	.68	.79	HS/ASG
	ASG	33	4.29	.90		
Site 135R	HS	29	4.05	.53	3.60 [b]	HS/ASG
	ASG	13	3.45	.42		
Site 137R	HS	10	4.15	.54	-0.12	HS/ASG
	ASG	7	4.18	.56		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups were tested. Site number is followed by an R if groups were randomly assigned.

This table appears as Table 4.3 in table section of chapter.

existed. In site 135, both HS and ASG groups originally consisted of both three and four-year-olds. However, following the original random assignment of children to groups, the school transportation unit which serves site 135 passed a rule stating that no children under 40 months of age could ride the buses (except those already riding the bus). This meant that as site 135 took further children into the program, the children had to be over 40 months of age or they could not ride the bus to Head Start. A large number of vacancies did occur in this Head Start program, prior to the end of fall testing; and virtually all the children in the ASG over 40 months of age became enrolled in the Head Start program. Thus the ASG was systemmatically depleted of children over 40 months and was left with children under 40 months. This led to the significant age difference between the two groups.

The other site in which a significant age difference was found, site 121, was not a randomization site. Here the ASG consisted of day care children. With greater care, we believe that equivalent groups could be constituted within this site.

Sex of Children

There were equal percentages of boys and girls in the total sample (49.4% and 50.6% respectively), and the distributions were nearly the same within all groups and all sites (Table 4-C, below, and Tables 4.4 - 4.6). Table 4-C shows the results of comparing the proportions of boys and girls across the groups, overall and within sites. There were no significant differences; the groups are equivalent with regard to sex.

Ethnicity of Children

Of the sample tested, 32.4% were White, 59.8% were Black, 5.5% were Hispanic, 1.3% were American Indian or Alaskan Native, 7% were Asian or Pacific Islander, and .4% were classified as "other" (Table 4-D, below, and Tables 4.7 - 4.9) Of primary interest here are the comparisons between the BES, Head Start, and ASG subgroups on the distribution of children in the ethnic categories. As presented in Table 4-D, chi square contrasts between BES and Head Start, Head Start and ASG, and ASG and BES are all significant. That is, as can be clearly seen in the table, the ethnic compositions of the three groups are not comparable.

Table 4-C. Comparison of Proportions of Boys and Girls Between Groups, Overall and Within Sites[1]

	N	Proportion of Girls	Proportion of Boys	*t* and Significance	Contrast
Entire Sample	1163	.50	.50		
BES Children	152	.46	.54	.86	BES/HS
HS Children	812	.50	.50	.09	HS/ASG
ASG Children	199	.50	.50	.78	BES/ASG
Site 121 HS	38	.53	.47	-.54	HS/ASG
ASG	45	.47	.53		
Site 122R HS	37	.49	.51	1.42	HS/ASG
ASG	2	1.00	.00		
Site 131 HS	39	.56	.44	-.91	HS/ASG
ASG	35	.46	.54		
Site 132 HS	58	.50	.50	.97	HS/ASG
ASG	33	.61	.39		
Site 135R HS	29	.41	.59	.73	HS/ASG
ASG	13	.54	.46		
Site 137R HS	10	.50	.50	-.27	HS/ASG
ASG	7	.43	.57		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups were tested. Site number is followed by an R if groups were randomly assigned.

This table appears as Table 4.6 in table section of chapter.

Table 4-D. Comparison of Percent of Children Across Ethnicity Categories By Group, Overall and Within Sites[1]

			Number and Percent* of Children in Each Ethnicity Category							
		N	White, not of Hispanic Origin	Black, not of Hispanic Orgin	Hispanic	American Indian/Alaskan Native	Asian/ Pacific Islander	Other	^{2} value** and significance	Contrast
Entire Sample		1147	371 32.4%	686 59.8%	63 5.5%	15 1.3%	8 .7%	4 .4%		
	BES	153	85 55.6%	43 28.1%	10 6.5%	11 7.2%	3 2.0%	1 .7%	39.31^{b}	BES/HS
	HS	796	269 33.8%	462 58.0%	53 6.7%	4 .5%	5 .6%	3 .4%	74.78^{b}	HS/ASG
	ASG	198	17 8.6%	181 91.4%	0	0	0	0	133.91^{b}	ASG/BES
Site 121	HS	38	0	37 97.4%	1 2.6%	0	0	0	1.20	HS/ASG
	ASG	45	0	45 100.0%	0	0	0	0		
Site 125 R	HS	5	0	5 100.0%	0	0	0	0	2.86	HS/ASG
	ASG	7	3 42.9%	4 57.1%	0	0	0	0		
Site 131	HS	39	16 41.0%	23 59.0%	0	0	0	0	1.93	HS/ASG
		35	9 25.7%	74.3%	0	0	0	0		
Site 132	HS	58	0	58 100.0%	0	0	0	0	---	HS/ASG
	ASG	33	0	33 100.0%	0	0	0	0		
Site 135 R	HS	29	9 31.0%	20 69.0%	0	0	0	0	1.14	HS/ASG
	ASG	13	2 15.4%	11 84.6%	0	0	0	0		
Site 137 R	HS	10	0	10 100.0%	0	0	0	0	---	HS/ASG
	ASG	7	0	7 100.0%	0	0	0	0		

* Percent shown = row percent

** ^{2} was computed considering only the first three ethnicity categories due to sparseness of other cells.

$^{a}p < .05$

$^{b}p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

This table appears as Table 4.9 in table section.

The significant differences between BES and the other groups were not unexpected. BES programs were not selected primarily for the purpose of being representative of the Head Start population nationwide. Further, it has been assumed from the beginning that any resulting differences could be corrected through appropriate statistical techniques.

The reason for the Head Start/ASG differences is similar to that discussed above with regard to age differences. Within the sites in which both HS and ASG groups were tested, the chi square values are non-significant. Therefore, the ethnic compositions of HS and ASG within sites are comparable. Since ASG's were achieved in sites serving primarily, if not exclusively, Black families, those sites' ethnic composition (for both groups) were not the same as that of the overall sample. The total Head Start sample included many sites with no ASG group.[7] Therefore, although the samples of children in HS and ASG were comparable within sites, the total HS and ASG samples were not comparable. If random assignment, or some other form of comparison group, could be achieved in all Head Start sites (which we believe is possible, given sufficient time and planning), we believe that the overall HS and ASG groups would be comparable with regard to ethnicity as well as the other background variables.

Summary of Child Characteristics

Head Start and ASG groups tended to be comparable on age, sex, and ethnicity across the sites which have both such groups. The BES group, however, is significantly older than the HS and ASG groups, and BES is significantly different from the other groups on ethnicity as well.

Differences Between the Study Groups on the Child Measures

Mean Scores Adjusted For Age Differences

Head Start compared to ASG. As discussed in the previous section, the mean ages of children in the three evaluation groups were significantly different. Therefore, we could expect that there would be significant differences in the mean scores on the child measures for the three groups, since the measures are significantly related to child age. Thus the appropriate analysis for detecting a difference in test scores (beyond that attributable to age) was analysis of covariance, using child age as the covariate, in a regression design. When mean child test scores were thus adjusted for age differences, there were very few significant differences between the overall HS and ASG groups, as shown in Table 4-E, below (and Table 4.14); and there were no significant differences on adjusted mean scores between the HS and ASG groups within the six sites having both groups. The appropriate HS - ASG comparison for this first cohort is within those six sites, using mean scores adjusted for age differences. (Total HS and ASG groups were used for the BES - HS and the BES - ASG comparison).

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[7] The HS Group represented 24 sites; the ASG group represented a subset of 6 of those sites.

BES compared to the other two groups. The BES group scored higher (with adjusted means) than the HS group on two of the ten measures, Conceptual Grouping, and Draw-A-Child. In addition, the BES group scored significantly higher than the ASG group on Draw-A-Child. The adjusted mean score analyses are summarized in Table 4-E. The unadjusted mean scores are shown for all three groups, for information purposes, in Tables 4.15 through 4.24.

Summary of Group Comparisons on Child Measures

There are relatively few differences between the groups' scores on child measures when the scores are adjusted for age (Table 4-E). Further, within the six sites where both HS and ASG children were tested, there were no significant differences between HS and ASG on the child tests. The groups can therefore be considered comparable on the child measures--especially if the age differences between the groups are considered acceptable. By obtaining ASG groups in all HS sites and with improved procedures for assignment of children to HS and ASG groups within Head Start sites, the age difference between HS and ASG can be eliminated in future cohorts. The age difference between BES and HS overall samples will probably remain, since BES is targeted toward four-year-olds. The adjusted mean scores analysis indicates that the age difference will not be critical to the evaluation. If the age difference were to become problematic during the course of the longitudinal evaluation, another solution would be possible. The HS and ASG groups in future cohorts will be of sufficient size to allow the evaluator to make an adjustment in analysis procedures when comparing the BES group with the other groups; that

Table 4-E. Comparison of Mean Scores on Child Subtests for Differences Between Groups, Over and Above the Influence of Age Differences

Child Subtest	Groups Compared	*F* Value for Group Difference, Covarying Age	Significant Difference	R Square of Full Model[1]
Block Building	BES/HS	0.65	ns	.21
	HS/ASG	5.74^a	HS>ASG	.24
	BES/ASG	3.64	ns	.26
Basic Information	BES/HS	0.81	ns	.19
	HS/ASG	0.06	ns	.21
	BES/ASG	0.05	ns	.22
Number Readiness	BES/HS	1.27	ns	.19
	HS/ASG	4.92^a	HS>ASG	.21
	BES/ASG	0.21	ns	.16
Verbal Memory	BES/HS	2.59	ns	.22
	HS/ASG	3.55	ns	.24
	BES/ASG	3.59	ns	.16
PIPS	BES/HS	0.50	ns	.10
	HS/ASG	3.43	ns	.13
	BES/ASG	1.87	ns	.18
Conceptual Grouping	BES/HS	12.57^b	BES>HS	.16
	HS/ASG	0.68	ns	.16
	BES/ASG	3.01	ns	.21
Reading Readiness	BES/HS	3.82	ns	.17
	HS/ASG	3.06	ns	.20
	BES/ASG	0.01	ns	.16
Verbal Fluency	BES/HS	1.73	ns	.23
	HS/ASG	1.08	ns	.24
	BES/ASG	0.42	ns	.22
Pictorial Memory	BES/HS	0.31	ns	.16
	HS/ASG	7.03^a	HS>ASG	.17
	BES/ASG	3.10	ns	.33
Draw-A-Child	BES/HS	5.69^a	BES>HS	.24
	HS/ASG	1.81	ns	.27
	BES/ASG	7.04^b	BES>ASG	.33

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[1] Full Model: Subtest score = $a_0U + a_1$ Group Membership + a_2 Age + Error_1

Restricted Model: Subtest Score = $a_0U + a_2$ Age + Error_2

$^a p < .05$

$^b p < .01$

This table appears as Table 4.14 in table section.

is, it would be feasible to use a limited pool of subjects (four-year-olds only) from the ASG and HS group in analyses of differences between these groups and BES.

Representativeness of the Head Start Program Sample

Within the Head Start group, 813 children were tested in the fall of 1979. As discussed earlier in this report as well as in Project Report 10, this number was far lower than the expected total of 1500 children (60 in each of the 25 sites). This alone would tend to reduce the confidence we could place in this sample's capacity to represent the national population of Head Start children. It is important, therefore, to examine the reasons for this drastic reduction in numbers. The major reasons (and the number of "lost tests" resulting from each) were:

- The testing period was unavoidably reduced (due to an ACYF funding delay) from three months to two months, without an increase in testing staff. In fact, the delay in the onset of training and testing caused the loss of some testing staff. (234 "lost tests")
- Many programs served fewer than 60 children eligible for the evaluation. The site sampling procedure included Head Start programs serving as few as 60 children. Since some spaces in each participating program were removed from use in random assignment due to enrollment of "must serve" children, and since we did not include non-randomly assigned children in the random assignment sites in the HS group, some sites had fewer than 60 children in the HS group. (74 "lost tests")
- Personnel problems caused reduced testing in two sites and invalid testing in two sites. Unfortunately, in all four of these sites, delayed testing had caused the loss of one of the two initially hired testers. Therefore, subsequent problems with the remaining tester were not able to be solved by increasing the other tester's load. (180 "lost tests")
- Parent materials for use with Spanish-speaking families were not considered acceptable by NTS, consultants, and the affected sites prior to child testing.[8] Therefore, no Spanish-speaking children were tested. (120 "lost tests")

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[8] Preparation of such materials and of tests for Spanish-speaking children were not part of NTS' evaluation contract.

In spite of the above listed problems, the Head Start group is remarkably similar to the over description of the Head Start population provided by the 1979-80 Program Information Report.[9] Table 4-F (4.25) presents the respective percentages of children in specified age categories, in the two samples. Unfortunately, the PIR data is available only by age groups defined in whole years, and we do not know if the PIR age ranges can be represented accurately by the combined Head Start sample age levels. Nevertheless, the two samples of Head Start children are very similar, with the Head Start sample containing a larger proportion of four-year-olds and a smaller proportion of five-year olds than does the PIR sample.

The NTS Head Start sample data is also similar to the PIR data with regard to ethnicity, the one other variable on which data is available for both samples. Spanish-speaking children were not tested in this NTS cohort (see Table 4-G), which explains the discrepancy between the two samples for the Hispanic category. Since Head Start programs outside the continental United States were eliminated from the sampling frame for NTS site selection, and if one adjusted all NTS percentages to account for the low representation of Hispanics, Asians and Alaskans due to these omissions, then the NTS sample indeed approaches the Head Start population (PIR data) on ethnicity.

It should be noted that the above comparison is at the child level and is limited to the children tested in this cohort for the NTS sample. A comparison of data at the Head Start program level in the Head Start and PIR samples was presented in Project Report 7, at which point it was also concluded that the samples were highly similar.

Similarity of Head Start and BES Samples

The BES sample, as represented in the first cohort, reflects some biases which are not expected to occur in later cohorts because of the manner in which the present sample was constituted.

- Only the first-year, or internal, BES programs were included. Second-year, external programs were selected only a few weeks before fall testing and could not be included in this cohort.

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[9] The PIR data is completed by each Grantee and summarized by ACYF yearly.

Table 4-F. Comparison on Age of Head Start Children in PIR Sample and NTS Evaluation Sample.

Head Start Children, as described by PIR Data		Head Start Children, as described by Head Start Group, within NTS Evaluation Sample	
Age	Percent	Age	Percent
3 years	25.7	37-48 mo	26.2
4 years	53.9	49-60 mo	61.1
5 years	19.0	61-72 mo	11.7
6 years	.1	over 72 mo	.4

Table 4-G. Comparison on Ethnicity of Head Start Children in PIR Sample and NTS Evaluation Sample

Ethnicity Category	Percent of Children as described by PIR Data, 1979-80	Percent of Children, as described by Head Start Group, NTS Evaluation Sample
White, not Hispanic origin	35	33.8
Black, not of Hispanic Origin	42	58.0
Hispanic	17	6.7[1]
Native American/ Alaskan	4	.5
Pacific Islander/ Asian	1	.6

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[1] No Spanish-speaking children were included in this sample, though Spanish-speaking children will be included in future cohorts.

- Of the 16 current BES programs, only 8 were included in the first cohort. Therefore, it is not possible to judge from this cohort how comparable future Head Start and BES groups will be.

While the the ethnic distributions within the first-cohort BES programs are dissimilar to those of the Head Start group, there is evidence obtained from funding applications and interim reports to indicate that the current 16 BES programs are much more similar to the Head Start sample population.

The problem of a mean age difference between Head Start and BES groups, as discussed earlier in this chapter, will likely persist. However, one or both of the following procedures should alleviate the problem.

- Use analysis of covariance, with age of child as a covariate, in analyzing the test score differences between the groups.
- For purposes of comparison with BES, restrict the Head Start group sample to children in the four-year-old range, since this is the age group served by BES.

Future of the First Cohort in the Evaluation

As it was noted earlier in this chapter and elsewhere in this report, there were three main goals for the collection of data on the first cohort in the fall of 1979: to establish the equivalence of three evaluation groups, to further investigate the characteristics of the measures, and to establish baseline scores for this cohort. This chapter has concentrated on the first of these goals; chapter six is devoted to the second, the characteristics of the measures. The third goal per se has been achieved as well. The baseline scores are contained in Tables 4.15 through 4.24 and discussed briefly in this chapter. However, the broader purpose behind the third goal reflected the expectation that this cohort would continue in the longitudinal evaluation. The baseline scores, then, would be used to determine the gains made by children in each of these groups over the course of the years of the evaluation (perhaps through grade 6). As we have also pointed out above, it now appears unlikely that this first cohort will be continued in the evaluation, if indeed the evaluation itself continues. The main reason for this is that, due to funding delays unrelated to the performance of the evaluation, the first cohort was not post-tested at the end of the first program year.

Further, the period of time which has now elapsed since the last contact with the families in the cohort is so great that it seems unlikely that further data collection will take place with this cohort. We could reasonably speculate at this point on the usefulness of this sample, nevertheless, if ACYF were to decide to follow up with some of these children and families.

Random assignment of children to Head Start and Control Groups was successful in five sites. We tabulated data from only three of those sites for the purpose of this chapter.[10] However, because of random assignment, it would be appropriate to disregard pretest scores (and the lack of them) entirely and to compare later test scores and other data for the children in the HS and ASG groups for all five sites. In addition, in two other sites the HS and ASG groups were comparable on background and test scores even though their assignment to groups was not random. Therefore, there are at least seven sites where continued collection of data from the children and families of the first cohort would yield valuable information for both description and evaluation purposes.

The numerically identified tables follow and are the final section of this chapter.

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[10] In one site, after successful random assignment, there was a delay in the start of the Head Start program itself, due to fiscal problems. As a result, only ASG children were tested there. The program later opened and the HS children participated in the program. In the second site, assignment to groups was successful but testing was not--we believe our data collector falsified the test scores.

Table 4.1. NUMBER OF CHILDREN TESTED IN EACH AGE LEVEL FOR ENTIRE SAMPLE AND BY GROUPS

NUMBER AND PERCENT OF CHILDREN IN EACH AGE LEVEL

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
ENTIRE SAMPLE	1 -	9 0.77	132 11.34	183 15.72	345 29.64	360 30.93	103 8.85	28 2.41	4 0.34	1164
BES	1 -	0 0.00	0 0.00	3 1.97	46 30.26	80 52.63	23 15.13	0 0.00	0 0.00	152
HEAD START	0 -	4 0.49	87 10.70	126 15.50	253 31.12	244 30.01	71 8.73	25 3.08	3 0.37	813
ALTERNATIVE SERV	0 -	5 2.51	45 22.61	54 27.14	46 23.12	36 18.09	9 4.52	3 1.51	1 0.50	199

Table 4.2. NUMBER OF CHILDREN TESTED IN EACH AGE LEVEL BY SITES AND GROUPS

NUMBER AND PERCENT OF CHILDREN IN EACH AGE LEVEL

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
1) 203/BES	0	0	0	0	2	7	2	0	0	11
	-	0.00	0.00	0.00	18.18	63.64	18.18	0.00	0.00	
2) 204/BES	0	0	0	0	9	2	3	0	0	14
	-	0.00	0.00	0.00	64.29	14.29	21.43	0.00	0.00	
3) 207/BES	0	0	0	0	5	6	3	0	0	14
	-	0.00	0.00	0.00	35.71	42.86	21.43	0.00	0.00	
4) 208/BES	0	0	0	0	4	9	1	0	0	14
	-	0.00	0.00	0.00	28.57	64.29	7.14	0.00	0.00	
5) 209/BES	0	0	0	2	3	8	0	0	0	13
	-	0.00	0.00	15.38	23.08	61.54	0.00	0.00	0.00	
6) 210/BES	0	0	0	0	9	5	1	0	0	15
	-	0.00	0.00	0.00	60.00	33.33	6.67	0.00	0.00	
7) 211/BES	1	0	0	0	2	10	2	0	0	14
	-	0.00	0.00	0.00	14.29	71.43	14.29	0.00	0.00	
8) 213/BES	0	0	0	1	3	6	5	0	0	15
	-	0.00	0.00	6.67	20.00	40.00	33.33	0.00	0.00	
9) 214/BES	0	0	0	0	2	10	2	0	0	14
	-	0.00	0.00	0.00	14.29	71.43	14.29	0.00	0.00	
10) 215/BES	0	0	0	0	1	9	4	0	0	14
	-	0.00	0.00	0.00	7.14	64.29	28.57	0.00	0.00	
11) 217/BES	0	0	0	0	6	8	0	0	0	14
	-	0.00	0.00	0.00	42.86	57.14	0.00	0.00	0.00	

(CONTINUED)

Table 4.2. (Continued)

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
12) 121/HS	0	0	3	5	14	15	1	0	0	38
	.	0.00	7.89	13.16	36.84	39.47	2.63	0.00	0.00	
13) 121/ASG	0	0	8	13	15	8	1	0	0	45
	.	0.00	17.78	28.89	33.33	17.78	2.22	0.00	0.00	
14) 122/HS	0	0	7	8	12	10	0	0	0	37
	.	0.00	18.92	21.62	32.43	27.03	0.00	0.00	0.00	
15) 122/ASG	0	0	1	0	0	1	0	0	0	2
	.	0.00	50.00	0.00	0.00	50.00	0.00	0.00	0.00	
16) 125/HS	0	0	3	0	2	0	0	0	0	5
	.	0.00	60.00	0.00	40.00	0.00	0.00	0.00	0.00	
17) 125/ASG	0	3	4	0	0	0	0	0	0	7
	.	42.86	57.14	0.00	0.00	0.00	0.00	0.00	0.00	
18) 131/HS	0	0	8	8	6	14	3	0	0	39
	.	0.00	20.51	20.51	15.38	35.90	7.69	0.00	0.00	
19) 131/ASG	0	0	3	10	12	8	2	0	0	35
	.	0.00	8.57	28.57	34.29	22.86	5.71	0.00	0.00	
20) 132/HS	0	0	5	11	17	15	4	6	0	58
	.	0.00	8.62	18.97	29.31	25.86	6.90	10.34	0.00	
21) 132/ASG	0	1	7	5	7	6	3	3	1	33
	.	3.03	21.21	15.15	21.21	18.18	9.09	9.09	3.03	
22) 135/HS	0	0	8	3	11	7	0	0	0	29
	.	0.00	27.59	10.34	37.93	24.14	0.00	0.00	0.00	

(CONTINUED)

Table 4.2. (Continued)

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
23) 135/ASG	0	1	7	4	1	0	0	0	0	
	-	7.69	53.85	30.77	7.69	0.00	0.00	0.00	0.00	13
24) 137/HS	0	0	2	1	5	2	0	0	0	
	-	0.00	20.00	10.00	50.00	20.00	0.00	0.00	0.00	10
25) 137/ASG	0	0	0	3	1	3	0	0	0	
	-	0.00	0.00	42.86	14.29	42.86	0.00	0.00	0.00	7
26) 134/ASG	0	0	15	19	10	10	3	0	0	
	-	0.00	26.32	33.33	17.54	17.54	5.26	0.00	0.00	57
27) 118/HS	0	0	0	0	1	1	0	0	0	
	-	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	2
28) 120/HS	0	0	3	6	5	4	2	1	0	
	-	0.00	14.29	28.57	23.81	19.05	9.52	4.76	0.00	21
29) 123/HS	0	0	5	6	12	10	0	0	0	
	-	0.00	15.15	18.18	36.36	30.30	0.00	0.00	0.00	33
30) 124/HS	0	3	5	6	0	0	0	0	0	
	-	21.43	35.71	42.86	0.00	0.00	0.00	0.00	0.00	14
31) 126/HS	0	0	0	2	7	6	1	0	0	
	-	0.00	0.00	12.50	43.75	37.50	6.25	0.00	0.00	16
32) 130/HS	0	0	0	0	2	3	6	8	2	
	-	0.00	0.00	0.00	9.52	14.29	28.57	38.10	9.52	21
33) 133/HS	0	0	6	7	15	18	3	0	0	
	-	0.00	12.24	14.29	30.61	36.73	6.12	0.00	0.00	49

(CONTINUED)

Table 4.2. (Continued)

FREQUENCY ROW PCT	AGE MISSING	31 - 36 MONTHS	37 - 42 MONTHS	43 - 48 MONTHS	49 - 54 MONTHS	55 - 60 MONTHS	61 - 66 MONTHS	67 - 72 MONTHS	OVER 72 MONTHS	TOTAL
34) 136/HS	0	0	5	6	10	6	10	8	1	46
	-	0.00	10.87	13.04	21.74	13.04	21.74	17.39	2.17	
35) 138/HS	0	0	3	9	5	3	1	1	0	22
	-	0.00	13.64	40.91	22.73	13.64	4.55	4.55	0.00	
36) 139/HS	0	0	0	4	22	20	0	0	0	46
	-	0.00	0.00	8.70	47.83	43.48	0.00	0.00	0.00	
37) 140/HS	0	0	0	0	11	22	15	0	0	48
	-	0.00	0.00	0.00	22.92	45.83	31.25	0.00	0.00	
38) 141/HS	0	0	5	11	11	11	2	1	0	41
	-	0.00	12.20	26.83	26.83	26.83	4.88	2.44	0.00	
39) 145/HS	0	1	6	10	17	10	3	0	0	47
	-	2.13	12.77	21.28	36.17	21.28	6.38	0.00	0.00	
40) 146/HS	0	0	0	0	8	14	11	0	0	33
	-	0.00	0.00	0.00	24.24	42.42	33.33	0.00	0.00	
41) 147/HS	0	0	1	7	24	19	3	0	0	54
	-	0.00	1.85	12.96	44.44	35.19	5.56	0.00	0.00	
42) 148/HS	0	0	7	6	19	15	4	0	0	51
	-	0.00	13.73	11.76	37.25	29.41	7.84	0.00	0.00	
43) 149/HS	0	0	5	10	17	19	2	0	0	53
	-	0.00	9.43	18.87	32.08	35.85	3.77	0.00	0.00	
TOTAL	-	9	132	183	345	360	103	28	4	1164

Table 4.3. Comparison of Mean Child Age in Years Between Groups, Overall and Within Sites

	N	Mean	Standard Deviation	*t* and Significance	Contrast
Entire Sample	1164	4.34	.62		
BES Children	152	4.67	.33	6.12^{b}	BES/HS
HS Children	813	4.36	.62	6.64^{b}	HS/ASG
ASG Children	199	4.03	.66	11.01^{b}	BES/ASG
Site 121 HS	38	4.31	.48	2.37^{a}	HS/ASG
ASG	45	4.04	.53		
Site 122R HS	37	4.12	.56	.19	HS/ASG
ASG	2	4.03	.97		
Site 131 HS	39	4.22	.65	.09	HS/ASG
ASG	45	4.13	.51		
Site 132 HS	58	4.42	.68	.79	HS/ASG
ASG	33	4.29	.90		
Site 135R HS	29	4.05	.53	3.60^{b}	HS/ASG
ASG	13	3.45	.42		
Site 137R HS	10	4.15	.54	-0.12	HS/ASG
ASG	7	4.18	.56		

$^{a}p < .05$

$^{b}p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by R if groups were randomly assigned.

Table 4.4. Number of Children Tested of Each Sex
For Entire Sample and By Groups

NUMBER AND PERCENT OF CHILDREN OF EACH SEX

```
          FREQUENCY        |
          ROW PCT          |MISSING |FEMALE  |MALE    |  TOTAL
          -----------------+--------+--------+--------+
          ENTIRE SAMPLE    |      2 |    575 |    588 |   1163
                           |      . |  49.44 |  50.56 |
          -----------------+--------+--------+--------+
     ----------------------+--------+--------+--------+
     BES                   |      1 |     70 |     82 |    152
                           |      . |  46.05 |  53.95 |
     ----------------------+--------+--------+--------+
     HEAD START            |      1 |    405 |    407 |    812
                           |      . |  49.88 |  50.12 |
     ----------------------+--------+--------+--------+
     ALTERNATIVE SERV      |      0 |    100 |     99 |    199
                           |      . |  50.25 |  49.75 |
     ----------------------+--------+--------+--------+
     TOTAL                        .      575      588     1163
```

Table 4.5. NUMBER OF CHILDREN TESTED OF EACH SEX BY SITE AND GROUP

SITE NUMBER AND PERCENT OF CHILDREN OF EACH SEX

FREQUENCY ROW PCT	MISSING	FEMALE	MALE	TOTAL
1) 203/BES	0	4	7	11
	.	36.36	63.64	
2) 204/BES	0	4	10	14
	.	28.57	71.43	
3) 207/BES	0	4	10	14
	.	28.57	71.43	
4) 208/BES	1	3	10	13
	.	23.08	76.92	
5) 209/BES	0	7	6	13
	.	53.85	46.15	
6) 210/BES	0	6	9	15
	.	40.00	60.00	
7) 211/BES	0	11	4	15
	.	73.33	26.67	
8) 213/BES	0	7	8	15
	.	46.67	53.33	
9) 214/BES	0	7	7	14
	.	50.00	50.00	
10) 215/BES	0	8	6	14
	.	57.14	42.86	
11) 217/BES	0	9	5	14
	.	64.29	35.71	
12) 121/HS	0	20	18	38
	.	52.63	47.37	
13) 121/ASG	0	21	24	45
	.	46.67	53.33	
14) 122/HS	0	18	19	37
	.	48.65	51.35	
15) 122/ASG	0	2	0	2
	.	100.00	0.00	

(CONTINUED)

Table 4.5. (Continued)

SITE   NUMBER AND PERCENT OF CHILDREN OF EACH SEX

```
FREQUENCY     |
 ROW PCT      |MISSING |FEMALE  |MALE    |  TOTAL
--------------+--------+--------+--------+
16) 125/HS    |      0 |      3 |      2 |      5
              |      . |  60.00 |  40.00 |
--------------+--------+--------+--------+
17) 125/ASG   |      0 |      2 |      5 |      7
              |      . |  28.57 |  71.43 |
--------------+--------+--------+--------+
18) 131/HS    |      0 |     22 |     17 |     39
              |      . |  56.41 |  43.59 |
--------------+--------+--------+--------+
19) 131/ASG   |      0 |     16 |     19 |     35
              |      . |  45.71 |  54.29 |
--------------+--------+--------+--------+
20) 132/HS    |      0 |     29 |     29 |     58
              |      . |  50.00 |  50.00 |
--------------+--------+--------+--------+
21) 132/ASG   |      0 |     20 |     13 |     33
              |      . |  60.61 |  39.39 |
--------------+--------+--------+--------+
22) 135/HS    |      0 |     12 |     17 |     29
              |      . |  41.38 |  58.62 |
--------------+--------+--------+--------+
23) 135/ASG   |      0 |      7 |      6 |     13
              |      . |  53.85 |  46.15 |
--------------+--------+--------+--------+
24) 137/HS    |      0 |      5 |      5 |     10
              |      . |  50.00 |  50.00 |
--------------+--------+--------+--------+
25) 137/ASG   |      0 |      3 |      4 |      7
              |      . |  42.86 |  57.14 |
--------------+--------+--------+--------+
26) 134/ASG   |      0 |     29 |     28 |     57
              |      . |  50.88 |  49.12 |
--------------+--------+--------+--------+
27) 118/HS    |      0 |      1 |      1 |      2
              |      . |  50.00 |  50.00 |
--------------+--------+--------+--------+
28) 120/HS    |      0 |     11 |     10 |     21
              |      . |  52.38 |  47.62 |
--------------+--------+--------+--------+
29) 123/HS    |      0 |     18 |     15 |     33
              |      . |  54.55 |  45.45 |
--------------+--------+--------+--------+
30) 124/HS    |      0 |      9 |      5 |     14
              |      . |  64.29 |  35.71 |
--------------+--------+--------+--------+

(CONTINUED)
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Table 4.5. (Continued)

SITE FREQUENCY ROW PCT	NUMBER AND PERCENT OF CHILDREN OF EACH SEX MISSING	 FEMALE	 MALE	 TOTAL
31) 126/HS	0 .	8 50.00	8 50.00	16
32) 130/HS	0 .	7 33.33	14 66.67	21
33) 133/HS	0 .	23 46.94	26 53.06	49
34) 136/HS	0 .	23 50.00	23 50.00	46
35) 138/HS	0 .	8 36.36	14 63.64	22
36) 139/HS	0 .	25 54.35	21 45.65	46
37) 140/HS	0 .	24 50.00	24 50.00	48
38) 141/HS	0 .	17 41.46	24 58.54	41
39) 14[illegible]/HS	0 .	20 42.55	27 57.45	47
40) 146/HS	0 .	19 57.58	14 42.42	33
41) 147/HS	0 .	28 51.85	26 48.15	54
42) 148/HS	1 .	28 56.00	22 44.00	50
43) 149/HS	0 .	27 50.94	26 49.06	53
TOTAL	.	575	588	1163

Table 4.6. Comparison of Proportions of Boys and Girls Between Groups, Overall and Within Sites[1]

		N	Proportion of Girls	Proportion of Boys	t and Significance	Contrast
Entire Sample		1163	.50	.50		
BES Children		152	.46	.54	.86	BES/HS
HS Children		812	.50	.50	.09	HS/ASG
ASG Children		199	.50	.50	.78	BES/ASG
Site 121	HS	38	.53	.47	-.54	HS/ASG
	ASG	45	.47	.53		
Site 122 R	HS	37	.49	.51	1.42	HS/ASG
	ASG	2	1.00	.00		
Site 131	HS	39	.56	.44	-.91	HS/ASG
	ASG	35	.46	.54		
Site 132	HS	58	.50	.50	.97	HS/ASG
	ASG	33	.61	.39		
Site 135R	HS	29	.41	.59	.73	HS/ASG
	ASG	13	.54	.46		
Site 137R	HS	10	.50	.50	-.27	HS/ASG
	ASG	7	.43	.57		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.7. Number of Children Tested in Each Ethnicity Category For Entire Sample and By Group

NUMBER AND PERCENT OF CHILDREN IN EACH ETHNICITY CATEGORY

FREQUENCY ROW PCT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
ENTIRE SAMPLE	18 .	371 32.35	686 59.81	63 5.49	15 1.31	8 0.70	4 0.35	1147
BES	0 .	85 55.56	43 28.10	10 6.54	11 7.19	3 1.96	1 0.65	153
HEAD START	17 .	269 33.79	462 58.04	53 6.66	4 0.50	5 0.63	3 0.38	796
ALTERNATIVE SERV	1 .	17 8.59	181 91.41	0 0.00	0 0.00	0 0.00	0 0.00	198
TOTAL	.	371	686	63	15	8	4	1147

Table 4.8 Number of Children Tested in Each Ethnicity Category by Site and Group

SITE NUMBER AND PERCENT OF CHILDREN OF EACH ETHNICITY

FREQUENCY ROW PCT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
1) 203/BES	0	0	0	0	11	0	0	11
	-	0.00	0.00	0.00	100.00	0.00	0.00	
2) 204/BES	0	14	0	0	0	0	0	14
	-	100.00	0.00	0.00	0.00	0.00	0.00	
3) 207/BES	0	10	3	1	0	0	0	14
	-	71.43	21.43	7.14	0.00	0.00	0.00	
4) 208/BES	0	9	3	0	0	1	1	14
	-	64.29	21.43	0.00	0.00	7.14	7.14	
5) 209/BES	0	3	6	4	0	0	0	13
	-	23.08	46.15	30.77	0.00	0.00	0.00	
6) 210/BES	0	11	4	0	0	0	0	15
	-	73.33	26.67	0.00	0.00	0.00	0.00	
7) 211/BES	0	0	15	0	0	0	0	15
	-	0.00	100.00	0.00	0.00	0.00	0.00	
8) 213/BES	0	8	5	2	0	0	0	15
	-	53.33	33.33	13.33	0.00	0.00	0.00	
9) 214/BES	0	12	2	0	0	0	0	14
	-	85.71	14.29	0.00	0.00	0.00	0.00	
10) 215/BES	0	8	5	1	0	0	0	14
	-	57.14	35.71	7.14	0.00	0.00	0.00	
11) 217/BES	0	10	0	2	0	2	0	14
	-	71.43	0.00	14.29	0.00	14.29	0.00	

(CONTINUED)

Table 4.8. (Continued)
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NUMBER AND PERCENT OF CHILDREN OF EACH ETHNICITY

SITE FREQUENCY ROW PCT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
12) 121/HS	0 -	0 0.00	37 97.37	1 2.63	0 0.00	0 0.00	0 0.00	38
13) 121/ASG	0 -	0 0.00	45 100.00	0 0.00	0 0.00	0 0.00	0 0.00	45
14) 122/HS	0 -	0 0.00	36 97.30	0 0.00	0 0.00	1 2.70	0 0.00	37
15) 122/ASG	0 -	0 0.00	2 100.00	0 0.00	0 0.00	0 0.00	0 0.00	2
16) 125/HS	0 -	0 0.00	5 100.00	0 0.00	0 0.00	0 0.00	0 0.00	5
17) 125/ASG	0 -	3 42.86	4 57.14	0 0.00	0 0.00	0 0.00	0 0.00	7
18) 131/HS	0 -	16 41.03	23 58.97	0 0.00	0 0.00	0 0.00	0 0.00	39
19) 131/ASG	0 -	9 25.71	26 74.29	0 0.00	0 0.00	0 0.00	0 0.00	35
20) 132/HS	0 -	0 0.00	58 100.00	0 0.00	0 0.00	0 0.00	0 0.00	58
21) 132/ASG	0 -	0 0.00	33 100.00	0 0.00	0 0.00	0 0.00	0 0.00	33
22) 135/HS	0 -	9 31.03	20 68.97	0 0.00	0 0.00	0 0.00	0 0.00	29

(CONTINUED)

Table 4.8 (Continued)
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SITE FREQUENCY ROW PCT	NUMBER AND PERCENT OF CHILDREN OF EACH ETHNICITY MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
23) 135/ASG	0	2	11	0	0	0	0	13
	.	15.38	84.62	0.00	0.00	0.00	0.00	
24) 137/HS	0	0	10	0	0	0	0	10
	.	0.00	100.00	0.00	0.00	0.00	0.00	
25) 137/ASG	0	0	7	0	0	0	0	7
	.	0.00	100.00	0.00	0.00	0.00	0.00	
26) 134/ASG	1	3	53	0	0	0	0	56
	.	5.36	94.64	0.00	0.00	0.00	0.00	
27) 118/HS	0	0	2	0	0	0	0	2
	.	0.00	100.00	0.00	0.00	0.00	0.00	
28) 120/HS	0	0	21	0	0	0	0	21
	.	0.00	100.00	0.00	0.00	0.00	0.00	
29) 123/HS	0	0	30	3	0	0	0	33
	.	0.00	90.91	9.09	0.00	0.00	0.00	
30) 124/HS	0	0	13	0	0	0	1	14
	.	0.00	92.86	0.00	0.00	0.00	7.14	
31) 126/HS	16	0	0	0	0	0	0	0
	.	.	.	.	.	.	.	
32) 130/HS	0	0	21	0	0	0	0	21
	.	0.00	100.00	0.00	0.00	0.00	0.00	
33) 133/HS	0	4	45	0	0	0	0	49
	.	8.16	91.84	0.00	0.00	0.00	0.00	

(CONTINUED)

Table 4.8. (Continued)
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SITE	NUMBER AND PERCENT OF CHILDREN OF EACH ETHNICITY							
FREQUENCY ROW PCT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
34) 136/HS	0 .	2 4.35	44 95.65	0 0.00	0 0.00	0 0.00	0 0.00	46
35) 138/HS	0 .	5 22.73	2 9.09	14 63.64	0 0.00	1 4.55	0 0.00	22
36) 139/HS	0 .	11 23.91	34 73.91	1 2.17	0 0.00	0 0.00	0 0.00	46
37) 140/HS	0 .	8 16.67	38 79.17	2 4.17	0 0.00	0 0.00	0 0.00	48
38) 141/HS	0 .	27 65.85	13 31.71	0 0.00	1 2.44	0 0.00	0 0.00	41
39) 145/HS	0 .	43 91.49	1 2.13	0 0.00	1 2.13	2 4.26	0 0.00	47
40) 146/HS	0 .	8 24.24	0 0.00	23 69.70	0 0.00	0 0.00	2 6.06	33
41) 147/HS	0 .	41 75.93	1 1.85	9 16.67	2 3.70	1 1.85	0 0.00	54
42) 148/HS	1 .	48 96.00	2 4.00	0 0.00	0 0.00	0 0.00	0 0.00	50
43) 149/HS	0 .	47 88.68	6 11.32	0 0.00	0 0.00	0 0.00	0 0.00	53

Table 4.9 Comparison of Percent of Children Across Ethnicity Categories By Group, Overall and Within Sites[1]

Number and Percent* of Children in Each Ethnicity Category

		N	White, not of Hispanic Origin	Black, not of Hispanic Orgin	Hispanic	American Indian/Alaskan Native	Asian/ Pacific Islander	Other	^{2} value** and significance	Contrast
Entire Sample		1147	371 32.4%	686 59.8%	63 5.5%	15 1.3%	8 .7%	4 .4%		
	BES	153	85 55.6%	43 28.1%	10 6.5%	11 7.2%	3 2.0%	1 .7%	39.31^b	BES/HS
	HS	796	269 33.8%	462 58.0%	53 6.7%	4 .5%	5 .6%	3 .4%	74.78^b	HS/ASG
	ASG	198	17 8.6%	181 91.4%	0	0	0	0	133.91^b	ASG/BES
Site 121	HS	38	0	37 97.4%	1 2.6%	0	0	0	1.20	HS/ASG
	ASG	45	0	45 100.0%	0	0	0	0		
Site 125 R	HS	5	0	5 100.0%	0	0	0	0	2.86	HS/ASG
	ASG	7	3 42.9%	4 57.1%	0	0	0	0		
Site 131	HS	39	16 41.0%	23 59.0%	0	0	0	0	1.93	HS/ASG
		35	9 25.7%	74.3%	0	0	0	0		
Site 132	HS	58	0	58 100.0%	0	0	0	0	---	HS/ASG
	ASG	33	0	33 100.0%	0	0	0	0		
Site 135 R	HS	29	9 31.0%	20 69.0%	0	0	0	0	1.14	HS/ASG
	ASG	13	2 15.4%	11 84.6%	0	0	0	0		
Site 137 R	HS	10	0	10 100.0%	0	0	0	0	---	HS/ASG
	ASG	7	0	7 100.0%	0	0	0	0		

* Percent shown = row percent

** ^{2} was computed considering only the first three ethnicity categories due to sparseness of other cells.

$^a p < .05$

$^b p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.10. NUMBER OF CHILDREN TESTED IN EACH AGE CATEGORY BY ETHNICITY FOR ENTIRE SAMPLE

ETHNICITY

AGELEVEL

FREQUENCY PERCENT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
AGE MISSING	0 .	0 .	1 .	0 .	0 .	0 .	0 .	. .
31 - 36 MONTHS	0 .	3 0.26	6 0.52	0 0.00	0 0.00	0 0.00	0 0.00	9 0.79
37 - 42 MONTHS	0 .	31 2.71	95 8.29	4 0.35	1 0.09	1 0.09	0 0.00	132 11.52
43 - 48 MONTHS	2 .	49 4.28	122 10.65	5 0.44	2 0.17	2 0.17	1 0.09	181 15.79
49 - 54 MONTHS	8 .	125 10.91	185 16.14	19 1.66	3 0.26	3 0.26	2 0.17	337 29.41
55 - 60 MONTHS	6 .	129 11.26	191 16.67	24 2.09	7 0.61	2 0.17	1 0.09	354 30.89
61 - 66 MONTHS	2 .	33 2.88	56 4.89	10 0.87	2 0.17	0 0.00	0 0.00	101 8.81
67 - 72 MONTHS	0 .	1 0.09	26 2.27	1 0.09	0 0.00	0 0.00	0 0.00	28 2.44
OVER 72 MONTHS	0 -	0 0.00	4 0.35	0 0.00	0 0.00	0 0.00	0 0.00	4 0.35
TOTAL	. -	371 32.37	685 59.77	63 5.50	15 1.31	8 0.70	4 0.35	1146 100.00

Table 4.11. NUMBER OF CHILDREN TESTED IN EACH AGE CATEGORY BY ETHNICITY

```
                              GROUP=BES

                              ETHNICITY

AGELEVEL

FREQUENCY       |
 PERCENT        |WHITE,  |BLACK,  |HISPANIC|AMERICAN|ASIAN   |OTHER   |
                |NOT HISP|NOT HISP|        | INDIAN |        |        |  TOTAL
----------------+--------+--------+--------+--------+--------+--------+
AGE     MISSING |      0 |      1 |      0 |      0 |      0 |      0 |
                |      . |      . |      . |      . |      . |      . |      .
----------------+--------+--------+--------+--------+--------+--------+      .
43 - 48  MONTHS |      1 |      2 |      0 |      0 |      0 |      0 |      3
                |   0.66 |   1.32 |   0.00 |   0.00 |   0.00 |   0.00 |   1.97
----------------+--------+--------+--------+--------+--------+--------+
49 - 54  MONTHS |     28 |     12 |      2 |      2 |      1 |      1 |     46
                |  18.42 |   7.89 |   1.32 |   1.32 |   0.66 |   0.66 |  30.26
----------------+--------+--------+--------+--------+--------+--------+
55 - 60  MONTHS |     45 |     20 |      6 |      7 |      2 |      0 |     80
                |  29.61 |  13.16 |   3.95 |   4.61 |   1.32 |   0.00 |  52.63
----------------+--------+--------+--------+--------+--------+--------+
61 - 66  MONTHS |     11 |      8 |      2 |      2 |      0 |      0 |     23
                |   7.24 |   5.26 |   1.32 |   1.32 |   0.00 |   0.00 |  15.13
----------------+--------+--------+--------+--------+--------+--------+
TOTAL                 85       42       10       11        3        1      152
                   55.92    27.63     6.58     7.24     1.97     0.66   100.00
```

Table 4.12. NUMBER OF CHILDREN TESTED IN EACH AGE CATEGORY BY ETHNICITY

GROUP=HEAD START

ETHNICITY

AGELEVEL

FREQUENCY PERCENT	MISSING	WHITE, NOT HISP	BLACK, NOT HISP	HISPANIC	AMERICAN INDIAN	ASIAN	OTHER	TOTAL
31 - 36 MONTHS	0 .	1 0.13	3 0.38	0 0.00	0 0.00	0 0.00	0 0.00	4 0.50
37 - 42 MONTHS	0 .	27 3.39	54 6.78	4 0.50	1 0.13	1 0.13	0 0.00	87 10.93
43 - 48 MONTHS	2 .	45 5.65	69 8.67	5 0.63	2 0.25	2 0.25	1 0.13	124 15.58
49 - 54 MONTHS	8 .	93 11.68	131 16.46	17 2.14	1 0.13	2 0.25	1 0.13	245 30.78
55 - 60 MONTHS	6 .	81 10.18	138 17.34	18 2.26	0 0.00	0 0.00	1 0.13	238 29.90
61 - 66 MONTHS	1 .	21 2.64	41 5.15	8 1.01	0 0.00	0 0.00	0 0.00	70 8.79
67 - 72 MONTHS	0 .	1 0.13	23 2.89	1 0.13	0 0.00	0 0.00	0 0.00	25 3.14
OVER 72 MONTHS	0 .	0 0.00	3 0.38	0 0.00	0 0.00	0 0.00	0 0.00	3 0.38
TOTAL	. .	269 33.79	462 58.04	53 6.66	4 0.50	5 0.63	3 0.38	796 100.00

Table 4.13. NUMBER OF CHILDREN TESTED IN EACH AGE CATEGORY BY ETHNICITY

```
                 GROUP=ALTERNATIVE SERV

                      ETHNICITY

 AGELEVEL

 FREQUENCY        |
 PERCENT          | MISSING|WHITE,  |BLACK,  |
                  |        |NOT HISP|NOT HISP|  TOTAL
 -----------------+--------+--------+--------+
 31 - 36  MONTHS  |      0 |      2 |      3 |      5
                  |      . |   1.01 |   1.52 |   2.53
 -----------------+--------+--------+--------+
 37 - 42  MONTHS  |      0 |      4 |     41 |     45
                  |      . |   2.02 |  20.71 |  22.73
 -----------------+--------+--------+--------+
 43 - 48  MONTHS  |      0 |      3 |     51 |     54
                  |      . |   1.52 |  25.76 |  27.27
 -----------------+--------+--------+--------+
 49 - 54  MONTHS  |      0 |      4 |     42 |     46
                  |      . |   2.02 |  21.21 |  23.23
 -----------------+--------+--------+--------+
 55 - 60  MONTHS  |      0 |      3 |     33 |     36
                  |      . |   1.52 |  16.67 |  18.18
 -----------------+--------+--------+--------+
 61 - 66  MONTHS  |      1 |      1 |      7 |      8
                  |      . |   0.51 |   3.54 |   4.04
 -----------------+--------+--------+--------+
 67 - 72  MONTHS  |      0 |      0 |      3 |      3
                  |      . |   0.00 |   1.52 |   1.52
 -----------------+--------+--------+--------+
 OVER 72  MONTHS  |      0 |      0 |      1 |      1
                  |      . |   0.00 |   0.51 |   0.51
 -----------------+--------+--------+--------+
 TOTAL                   .       17      181      198
                         .     8.59    91.41   100.00
```

Table 4.14. Comparison of Mean Scores on Child Subtests for Differences Between Groups, Over and Above the Influence of Age Differences

Child Subtest	Groups Compared	F Value for Group Difference, Covarying Age	Significant Difference	R Square of Full Model[1]
Block Building	BES/HS HS/ASG BES/ASG	0.65 5.74^a 3.64	ns HS>ASG ns	.21 .24 .26
Basic Information	BES/HS HS/ASG BES/ASG	0.81 0.06 0.05	ns ns ns	.19 .21 .22
Number Readiness	BES/HS HS/ASG BES/ASG	1.27 4.92^a 0.21	ns HS>ASG ns	.19 .21 .16
Verbal Memory	BES/HS HS/ASG BES/ASG	2.59 3.55 3.59	ns ns ns	.22 .24 .16
PIPS	BES/HS HS/ASG BES/ASG	0.50 3.43 1.87	ns ns ns	.10 .13 .18
Conceptual Grouping	BES/HS HS/ASG BES/ASG	12.57^b 0.68 3.01	BES>HS ns ns	.16 .16 .21
Reading Readiness	BES/HS HS/ASG BES/ASG	3.82 3.06 0.01	ns ns ns	.17 .20 .16
Verbal Fluency	BES/HS HS/ASG BES/ASG	1.73 1.08 0.42	ns ns ns	.23 .24 .22
Pictorial Memory	BES/HS HS/ASG BES/ASG	0.31 7.03^a 3.10	ns HS>ASG ns	.16 .17 .33
Draw-A-Child	BES/HS HS/ASG BES/ASG	5.69^a 1.81 7.04^b	BES>HS ns BES>ASG	.24 .27 .33

[1] Full Model: Subtest score = $a_0U + a_1$ Group Membership + a_2 Age + Error_1

Restricted Model: Subtest Score = $a_0U + a_2$ Age + Error_2

$^a p < .05$

$^b p < .01$

Table 4.15. Comparison of Mean Scores on Block Building, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample		1146	7.26	2.38		
BES Children		153	8.01	1.99	3.37[b]	BES/HS
HS Children		803	7.34	2.32	5.01[b]	HS/ASG
ASG Children		190	6.37	2.66	6.34[b]	BES/ASG
Site 121	HS	38	6.81	2.52	-1.86	HS/ASG
	ASG	45	7.71	1.84		
Site 122R	HS	37	7.16	2.23	0.71	HS/ASG
	ASG	2	6.00	2.82		
Site 131	HS	39	7.20	2.10	-0.04	HS/ASG
	ASG	35	7.23	2.45		
Site 132	HS	58	8.07	1.81	2.47[a]	HS/ASG
	ASG	33	6.85	2.91		
Site 135R	HS	29	6.45	2.73	1.83	HS/ASG
	ASG	13	4.85	2.34		
Site 137R	HS	5	4.00	4.42	0.30	HS/ASG
	ASG	5	3.20	4.09		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.16. Comparison of Mean Scores on Basic Information Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample		1146	3.25	1.91		
BES Children		153	3.78	1.62	3.27^a	BES/HS
HS Children		803	3.25	1.91	2.51^a	HS/ASG
ASG Children		190	2.85	2.07	4.54^b	ASG/BES
Site 121	HS	38	3.47	1.73	-1.06	HS/ASG
	ASG	45	3.93	2.12		
Site 122 R	HS	37	3.70	1.97	0.50	HS/ASG
	ASG	2	3.00	1.41		
Site 131	HS	39	3.05	2.05	-1.18	HS/ASG
	ASG	35	3.57	1.67		
Site 132	HS	58	3.91	2.00	2.56^a	HS/ASG
	ASG	33	2.72	2.32		
Site 135 R	HS	29	3.14	1.57	2.32^a	HS/ASG
	ASG	13	1.85	1.86		
Site 137 R	HS	5	2.40	1.82	1.91	HS/ASG
	ASG	5	0.80	0.45		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.17. Comparison of Mean Scores on Number Readiness, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample		1146	.871	1.14		
BES Children		153	1.19	1.23	3.62^a	BES/HS
HS Children		803	.84	1.11	0.80	HS/ASG
ASG Children		190	.76	1.17	3.32^b	ASG/BES
Site 121	**HS**	38	0.87	1.09	-1.50	HS/ASG
	ASG	45	1.31	1.50		
Site 122R	**HS**	37	0.97	1.42	0.46	HS/ASG
	ASG	2	0.50	0.72		
Site 131	**HS**	39	0.77	1.01	-0.46	HS/ASG
	ASG		0.88	1.16		
Site 132	**HS**	58	1.02	1.37	0.59	HS/ASG
	ASG	33	0.85	1.18		
Site 135R	**HS**	29	0.66	0.77	1.76	HS/ASG
	ASG	13	0.23	0.60		
Site 137R	**HS**	5	0.80	1.10	1.63	HS/ASG
	ASG	5	0.00	0.00		

$^a p < .05$

$^b p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.18. Comparison of Mean Scores on Verbal Memory, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	*t* and Significance	Contrast
Entire Sample		1146	14.89	8.18		
BES Children		153	15.84	7.23	1.29	BES/HS
HS Children		803	14.91	8.32	1.26	HS/ASG
ASG Children		190	14.06	8.26	2.09^a	ASG/BES
Site 121	HS	38	15.76	9.08	0.11	HS/ASG
	ASG	45	15.55	8.59		
Site 122 R	HS	37	18.19	6.92	0.23	HS/ASG
	ASG	2	17.00	9.89		
Site 131	HS	39	14.15	9.39	-0.77	HS/ASG
	ASG	35	15.71	7.78		
Site 132	HS	58	18.28	6.70	1.30	HS/ASG
	ASG	33	16.21	8.28		
Site 135 R	HS	29	15.14	8.61	2.48^a	HS/ASG
	ASG	13	8.62	5.85		
Site 137 R	HS	5	11.40	11.84	.50	HS/ASG
	ASG	5	8.00	9.72		

$^a p < .05$

$^b p < .01$

---

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.19. Comparison of Mean Scores on Preschool Interpersonal Problem Solving, Between Groups, Overall and Within Sites[1]

	N	Mean	Standard Deviation	*t* and Significance	Contrast
Entire Sample	1146	1.41	1.54		
BES Children	153	1.80	1.65	2.25^b	BES/HS
HS Children	803	1.45	1.54	4.05^b	HS/ASG
ASG Children	190	.97	1.37	5.16^b	ASG/BES
Site 121 HS	38	1.71	1.64	2.21^a	HS/ASG
ASG	45	1.00	1.28		
Site 122R HS	37	1.59	1.57	0.52	HS/ASG
ASG	2	1.00	1.41		
Site 131 HS	39	1.84	1.91	0.59	HS/ASG
ASG	35	1.60	1.61		
Site 132 HS	58	1.12	1.31	0.82	HS/ASG
ASG	33	.88	1.39		
Site 135R HS	29	1.07	1.16	2.26^a	HS/ASG
ASG	13	.31	.48		
Site 137R HS	5	2.30	2.11	1.23	HS/ASG
ASG	5	1.14	1.37		

$^a p < .05$

$^b p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.20. Comparison of Mean Scores on Conceptual Grouping Between Groups, Overall and Within Sites[1]

	N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample	1146	4.35	2.37		
BES Children	153	5.36	2.07	5.43[b]	BES/HS
HS Children	803	4.26	1.34	1.61	HS/ASG
ASG Children	190	3.95	2.49	5.61[b]	ASG/BES
Site 121 HS	38	4.21	2.48	-2.34[a]	HS/ASG
ASG	45	5.46	3.39		
Site 122R HS	37	4.29	2.42	0.16	HS/ASG
ASG	2	4.00	4.24		
Site 131 HS	39	3.87	2.14	-2.23[a]	HS/ASG
ASG	35	5.05	2.42		
Site 132 HS	58	4.66	1.99	1.88	HS/ASG
ASG	33	3.82	2.13		
Site 135R HS	29	4.00	2.48	1.91	HS/ASG
ASG	13	2.54	1.81		
Site 137R HS	5	2.80	.84	1.44	HS/ASG
ASG	5	1.80	1.30		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.21. Comparison of Mean Scores on Reading Readiness, Between Groups, Overall and Within Sites[1]

	N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample	1146	.59	.85		
BES Children	153	0.87	0.96	4.16[b]	BES/HS
HS Children	803	0.56	0.81	1.10	HS/ASG
ASG Children	190	0.49	0.88	3.81[b]	ASG/BES
Site 121 HS	38	0.60	0.94	-1.21	HS/ASG
ASG	45	0.89	1.15		
Site 122R HS	37	0.43	0.73	-0.13	HS/ASG
ASG	2	0.50	0.71		
Site 131 HS	39	0.31	0.57	-1.92	HS/ASG
ASG	35	0.66	0.97		
Site 132 HS	58	0.83	0.96	1.37	HS/ASG
ASG	33	0.54	0.90		
Site 135R HS	29	0.55	0.74	2.24[a]	HS/ASG
ASG	13	0.08	0.28		
Site 137R HS	5	0.20	0.45	-0.45	HS/ASG
ASG	5	0.40	0.89		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.22. Comparison of Mean Scores on Verbal Fluency, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample		1146	6.28	5.45		
BES Children		153	8.09	5.35	3.89[b]	BES/HS
HS Children		803	6.18	5.48	2.07[a]	HS/ASG
ASG Children		190	5.28	5.10	4.97[b]	ASG/BES
Site 121	HS	38	7.55	5.56	-.69	HS/ASG
	ASG	45	8.35	5.06		
Site 122 R	HS	37	8.83	6.07	-1.05	HS/ASG
	ASG	2	13.50	7.78		
Site 131	HS	39	5.74	5.84	-1.35	HS/ASG
	ASG	35	7.42	4.78		
Site 132	HS	58	5.78	5.40	0.67	HS/ASG
	ASG	33	5.00	5.11		
Site 135 R	HS	29	6.86	5.17	2.93[b]	HS/ASG
	ASG	13	1.28	2.69		
Site 137 R	HS	5	0.40	0.89	-0.80	HS/ASG
	ASG	5	1.00	1.41		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.23. Comparison of Mean Scores on Pictorial Memory, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	*t* and Significance	Contrast
Entire Sample		1146	3.05	2.06		
BES Children		153	3.33	1.82	1.83	BES/HS
HS Children		803	3.00	2.10	0.01	HS/ASG
ASG Children		190	3.00	2.08	1.56	ASG/BES
Site 121	HS	38	3.55	2.10	0.09	HS/ASG
	ASG	45	3.51	2.20		
Site 122R	HS	37	3.64	1.96	-0.96	HS/ASG
	ASG	2	5.00	0.00		
Site 131	HS	39	3.00	2.13	-1.68	HS/ASG
	ASG	35	3.77	1.76		
Site 132	HS	58	3.43	1.92	0.95	HS/ASG
	ASG	33	3.03	1.91		
Site 135R	HS	29	3.07	2.10	2.43[a]	HS/ASG
	ASG	13	1.47	1.66		
Site 137R	HS	5	1.60	2.30	0.00	HS/ASG
	ASG	5	1.60	1.67		

[a] $p < .05$

[b] $p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were random-y assigned.

Table 4.24. Comparison of Mean Scores on Draw-A-Child, Between Groups, Overall and Within Sites[1]

		N	Mean	Standard Deviation	t and Significance	Contrast
Entire Sample		1146	4.19	4.03		
BES Children		153	5.95	3.97	5.01^a	BES/HS
HS Children		803	4.18	4.02	4.26^b	HS/ASG
ASG Children		190	2.82	3.61	7.63^b	ASG/BES
Site 121	HS	38	3.50	3.83	-0.77	HS/ASG
	ASG	45	4.17	4.08		
Site 122R	HS	37	3.62	3.53	-0.14	HS/ASG
	ASG	2	4.00	5.65		
Site 131	HS	39	4.64	4.59	1.05	HS/ASG
	ASG	35	3.62	3.53		
Site 132	HS	58	4.21	4.17	1.14	HS/ASG
	ASG	33	3.18	4.00		
Site 135R	HS	29	3.69	3.16	3.95^b	HS/ASG
	ASG	13	0.15	0.55		
Site 137R	HS	5	0.60	0.89	-0.79	HS/ASG
	ASG	5	1.40	2.70		

$^a p < .05$

$^b p < .01$

[1] Sites presented in this table are those in which both HS and ASG groups occurred. Site number is followed by an R if groups were randomly assigned.

Table 4.25 Comparison on Age of Head Start Children in PIR Sample and NTS Evaluation Sample.

Head Start Children, as described by PIR Data		Head Start Children, as described by Head Start Group, within NTS Evaluation Sample	
Age	Percent	Age	Percent
3 years	25.7	37-48 mo	26.2
4 years	53.9	49-60 mo	61.1
5 years	19.0	61-72 mo	11.7
6 years	.1	over 72 mo	.4

Table 4.26 Comparison on Ethnicity of Head Start Children in PIR Sample and NTS Evaluation Sample

Ethnicity Category	Percent of Children as described by PIR Data, 1979-1980	Percent of Children, as described by Head Start Group, NTS Evaluation Sample
White, not Hispanic origin	35	33.8
Black, not of Hispanic Origin	42	58.0
Hispanic	17	6.7[1]
Native American/ Alaskan	4	.5
Pacific Islander/ Asian	1	.6

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[1] No Spanish-speaking children were included in this sample, though Spanish-speaking children will be included in future cohorts.

CHAPTER 5

RANDOM ASSIGNMENT: RESULTS AND RECOMMENDATIONS

Effectiveness of Random Assignment

Random assignment proved to be, as expected, the most challenging and difficult aspect of this evaluation. In retrospect, many of the obstacles could be overcome by proper timing, as discussed below. Further, the experience gained in this first year's attempt at random assignment makes it possible to achieve random assignment in most, if not all, sites in the future.

Not only do we believe that random assignment can be achieved and will be acceptable to the participating programs, but we are also confident that it will be an effective means for assuring comparability of groups for the longitudinal evaluation. Random assignment was given a "fair try" in very few sites, due to a long list of reasons summarized below. Nevertheless, in those few sites random assignment clearly led to equivalence of experimental and control groups (in all but one site) on the background variables of age, sex, and ethnicity, and to equivalence on pretest scores. In one site, however, the control group was depleted in a manner that systematically biased the age range represented by the groups due to a program policy change (as discussed in an earlier portion of this chapter). This particular evaluation mishap could not have been foreseen. However, we believe this event was a rare occurrence and not likely to happen again. If such an event were to occur in the next phase of the evaluation, a coordinated effort between the Head Start program division and the local program would probably circumvent the problem.

In order to forecast the future effectiveness of random assignment for this evaluation, we need to examine: (1) the reasons for its implementation in very few sites in 1979; and (2) NTS' recommendations for its implementation in the next stages of the evaluation. These are discussed below.

Barriers to Implementation of Random Assignment in 1979

As soon as NTS site visitors began talking with the staffs of the Head Start programs in the study, in the Spring of 1979, it became clear that there were two barriers to random assignment that would be difficult to breach in the few months' time remaining before the testing of the first cohort. These two problems led NTS and ACYF to decide not to attempt random assignment in fourteen of the twenty-eight sites for 1979.

Early Enrollment

The first barrier to random assignment was the assertion by several programs that they had already begun enrolling children for their fall 1979 Head Start classes. Since we believed that random assignment should be used across the board within a participating program, we decided to wait until the 1980 program year to try random assignment in those sites, thus giving the programs enough advance time to modify their enrollment procedures.

NTS has since learned that this problem could have been surmounted in 1979 and can be in the future in most sites. First and foremost, sites must learn of the evaluation a full ten to twelve months before the first cohort is selected. This will alleviate the early enrollment problem and a number of other problems as well. Further, we discovered that, even where many children had already been promised spaces in Head Start for the next year, the remaining program spaces and new spaces occurring because of "no shows" and withdrawals in the fall were sufficient for the desired size of the experimental group. Therefore, these spaces could be used for random assignment, and the procedure would probably not bias the groups in any meaningful way. The evaluator would want to use this approach for only the first cohort, though, or a bias might result in subsequent cohorts. (The program might encourage certain families to enroll very early.)

Insufficient Number of Eligible Children

The second barrier to random assignment, an insufficient number of extra eligible applicants within the program's catchment area to form a control group, was a far more serious problem. This problem led NTS in the Spring of

1979 to decide against attempting random assignment in a total of nine sites. Further, of the fourteen sites where random assignment was pursued during the summer and fall of 1979, this same problem kept us from implementing random assignment in another five sites.

Though the goal of recruiting 60 extra applicants may not seem to pose a major problem, it was difficult in many sites to achieve this goal for one or more of the following reasons:

1. The catchment area served by the Head Start Program was also served by Day Care Centers whose clients were from the same population as Head Start's;
2. In rural communities, the catchment area covered several hundred square miles, making it both difficult and expensive to locate and recruit additional children;
3. The Head Start program did not provide transportation for some portions of the catchment area;
4. Some programs were still recruiting children two to three weeks after the program opened; and
5. Some of the programs did not have recruitment procedures which would yield 60 additional children. (NTS staff assisted in recruitment only when the program requested their assistance.)

Solutions. The outlook for solving this problem, however, is not as bleak as we originally presumed. Fortunately, there are a number of procedures which can be used to increase the number of applicants and/or find another means of constituting a comparison group.

First, we found that program staff may not have an accurate estimate of the number of available children. Many programs, in a natural attempt to avoid recruiting far more children than they can serve, have not vigorously pursued recruitment. Given assistance in methods of recruitment, some of the participating programs will have sufficient eligible applicants for random assignment.

Second, a longer period of recruitment can yield more applicants than the very short period some programs use. This means that a locally-based evaluation staff member must be trained and involved in recruitment by March at the latest (rather than late May, when we hired and trained such individuals).

Third, in some sites insufficient numbers of applicants were received prior to program start-up in the fall, but numerous surplus applicants were put on the waiting list by mid-September. In such a community, it would be possible to use the above two approaches to boost early application. In the event that such efforts fail, however, and where a history of surplus fall applications exist, we recommend using the children on the waiting list as a comparison group. Though it can be argued that there may be an underlying difference between families who apply early and those who apply late, we have not empirically observed this to be the case. In the one site where this procedure was tried out in the present study, the comparison group was statistically equivalent to the Head Start group.

Fourth, in some communities, there appear to be pockets within the catchment area which are not well served by the Head Start program, due to transportation problems, but which contain Head-Start-eligible children. If ACYF could provide funds for transportation for these areas, then sufficient surplus applicants could be recruited and random assignment could take place. In view of the experience in this evaluation that the dental services offered to the control families as an incentive for participation were not really a major incentive, it might be possible to set aside the funds intended for such incentives to be used in solving this type of logistical problem (transportation) in the evaluation sites.

Finally, it may be possible to find other ways to constitute a comparison group where there are not surplus eligible applicants for Head Start. One such approach was tried in two sites in this study. In these two communities, Head Start staff were certain that nearly all children eligible for Head Start were already in either Head Start or a competing day care program. Since in those cases further recruitment was not expected to yield surplus applicants, we tried an alternate procedure. In both communities, NTS approached a neighboring day care center which appeared to serve families similar to those in the Head Start program. We asked for permission to contact their clients to ask them to participate in the study. In both places, we received this permission and proceeded to get a comparison group. In one site, the comparison group was successfully comparable to the Head Start group. In the other, insufficient information regarding children's ages interfered with our selecting a comparable group. Better procedures would correct this problem in the future.

There is, of course, a legitimate objection to this last approach: a comparison group filled with children who are all in a competing program setting was not what the evaluation design originally intended. NTS has consistently maintained, however, that it is neither desirable nor possible to find a control group of children, none of whom are participating in other child care or child development programs. Instead, we believe that the control group should be composed of children who represent the population of Head-Start-eligible-but-not-enrolled children in the participating communities. The experiences of the comparison group should include the full range of other child-program options used by the Head Start eligible population. Therefore, if in a given community, virtually all Head-Start-eligible-but-not-enrolled children are in day-care, then day-care children constitute the appropriate control group.

It is important to note that this NTS philosophy is consistent with the overall approach to the evaluation which we have taken since the proposal stage. That is, the most important research question is:

> What is the relationship between particular program components (e.g., curriculum, parent involvement) and important outcomes within and across the evaluation groups?

Thus, it is important to measure what kind of "treatment" the children in all evaluation groups receive--Head Start, Control and BES--and to examine the linear and non-linear relationships between this treatment continuum and outcomes for children and families. With this approach, it is still possible to research the other major questions of the evaluation as well.

Additional Obstacles to Random Assignment

Though NTS anticipated that many sites would be opposed to the whole idea of random assignment, only four programs raised serious objections. NTS senior staff were able to gain the support of one of these programs by spending additional time in the site, discussing the process. In two other of these sites, local conditions (lack of surplus applicants) made random assignment appear impossible anyway, and so we did not pursue the issue with them. The fourth site objected to the entire evaluation and withdrew from the study as a whole. In none of these sites did ACYF make attempts to persuade the programs further. Though each of these "problem sites" were of concern to the evaluation staff, we believe that reaction was surprisingly positive in the sample sites overall and was a credit to the communication and persuasion abilities of the initial site visitors.

Now that we have coped with these few major objections, as well as many minor problems which arose in many sites, we believe that careful explanation of the procedures coupled with early and visible support from ACYF for the study will lead to nearly complete (if not complete) cooperation of all the participating programs and cooperation with random assignment as well as with the other aspects of the evaluation.

One final problem with random assignment was encountered in the first year of the evaluation; it can be expected to occur nearly everywhere at some point in the longitudinal evaluation. The problem: the need for official approval from the elementary school system in order to test the children. In one of our sites, the Head Start delegate agency (the public schools) insisted on our applying for this approval before they would cooperate with random assignment. This would not have been a problem except that time was short. Though we complied with this request at once, and approval was eventually granted, a teacher's strike slowed down the approval process. Approval was received too late for testing as well as for random assignment. Making contact with the program a full ten months prior to random assignment, as recommended above, will probably solve this problem in the future.

Recommendations for Implementation of Random Assignment

Though it now appears that the first evaluation cohort--the central subject of this report--may not be continued, the eventual use of knowledge gained in these first two phases of the evaluation (regarding measurement as well as random assignment) will be the valued outcome of these phases. As a way of summarizing this knowledge, we have developed the following recommendations for the use of randomization in future Head Start evaluations:

1. Provide well-planned, consistent, and understandable communication with the participating programs.

   Programs must begin hearing about the evaluation plans as soon as possible, at least ten and preferably twelve months prior to the first implementation of random assignment. The first discussion of random assignment should be during a site visit of an evaluation staff member to the program, and the site visitor should have written materials to give to the program which explain random assignment procedures. In addition, it is important that the program be given evidence in writing of official ACYF support for the evaluation and for the procedure of random assignment. In the present evaluation, this took the form of a letter from ACYF Director of Head Start, James Robinson, to the local programs, asking for the program's cooperation and waiving the normal child selection procedures in favor of random assignment for the duration of the evaluation. Unfortunately, this letter was not made available to the programs until months after the site visit and only weeks before random assignment was to occur.

We recommend that the site visits remain a part of the communication process, and that there be provisions for additional site visits made by senior staff to programs where problems arise. Sites must be made to feel that their concerns are important and worth the time and resources of the evaluation contractor.

We recommend that a slide/sound presentation such as the one used by NTS remain a part of the communication process, and that such a presentation be prepared for parents as well as one for program staff.

It is important that all evaluation staff and all program staff have the same understanding of what random assignment is and what procedures will be used in each site. All communications with sites must be thorouoghly documented.

2. It must be clear to local program staff that not only the evaluation contractor but also ACYF has considered the issues involved in the process of randomization, and that the decisions made regarding those issues are supported by ACYF.

There are two important examples of such issues that we describe here. First, the designation of "must serve" children by the program may be a necessary accomodation to local priorities, but it is a troublesome issue in implementing random assignment. How many "must serves" can a program designate? Exactly what categories of needs will be accepted as "must serve" designations?

Second, the depletion of the ASG Group in order to fill new openings in the program threatens the success of the evaluation. However, a program may need to enroll those children in order to fill the program spaces. Can the program be required to recruit children for those openings from outside the ASG Group? (Will that requirement negatively affect the program's attitude toward the evaluation?) Can the programs be given special permission to serve fewer children than their allotment without losing funding? (But then the evaluation is causing fewer children to be served by Head Start.)

Prior decisions on these questions must be made at the ACYF level and communicated unambiguously to the sites.

3. Adapt the random assignment procedures to the local program's needs as much as possible without compromising the integrity of the design.

Some examples of this recommendation have been discussed above. For instance, even though a program may have already enrolled some children for the coming program year before contact was made regarding the evaluation, in some communities it was still possible to effect random assignment by using the remaining spaces in the program and the additional spaces which came open as children withdrew from the program.

Further, the procedures must be tailored to a local program such that a program which wishes to serve a specific number of children at specified age levels will be able to do so. That is, if a given program wants to have a class of 20 three-year-olds and a class of 20 four-year-olds (as this is their normal operating procedure), the assignment procedures can allow for this. However, if it is the opinion of the evaluator that this will mean a comparable control group cannot be achieved, the evaluator needs to discuss this problem with the program to see if a solution can be found.

4. Procedures must be carefully and appropriately timed.

Contact with a program which has been selected for participation in the evaluation should begin at least ten months prior to the first use of random assignment in this site. This means that, in order to implement random assignment in September of a given program year, that site must be contacted about the evaluation by November of the previous year at the very latest. Preferably, a site visit should occur no later than that November, with initial contact having occured in September.

Written suppport from ACYF to the program, encouraging participation and random assignment must be received by the program no later than January, and would be more helpful if available during the initial site visit.

Written, telephone, and in-person contact should be maintained during the months between the first contact and the implementation of random assignment. Based on the program's past experience with recruitment, assistance in recruitment should begin early enough to result in a sufficient surplus of eligible applicants.

5. An appropriate incentive must be offered to families for their participation in the evaluation, and that incentive must be viewed positively by the program as well as by the families.

Payment to the parents of approximately ten dollars each time their child is tested and/or they are interviewed appears to be a good incentive for participation for both the Head Start and control group families. This procedure has the additional advantage that it places no burden on the local Head Start program to administer it. It is for these reasons that we recommend this type of incentive for use in the continued evaluation. The following background material is included in support of this recommendation.

Parents in all three study groups were told that they would receive approximately twenty dollars a year in return for their participation in the study, as payment for their time in having their child tested and in being interviewed themselves. This was to be true for parents in both Head Start and control groups.

In addition, ACYF directly provided supplementary grants of $5000 to each of the 14 programs in the evaluation where there was a possibility for a comparison group of children in the first cohort. This money was to be used by the programs to provide dental services to the comparison group of children in return for their participation in the study. There were several problems with the incentive of dental services. First, it had been originally intended, and communicated to the sites, that the incentive would be full Head Start health services. Then, when NTS was midway through the Spring 1979 site visits, this was changed by ACYF to dental services only. Second, it was the opinion of several of the programs that the money provided was insufficient for the purpose. Several programs also felt that dental services would not constitute an incentive to the families. Finally, many programs reported difficulty in finding dentists available to provide the services and in providing transportation to and from the dentists' offices. However, other than the fact that programs voiced these objections and evidenced other problems as noted below, we have no firm data on what actually occurred and how much of a burden on the programs these services became. (The evaluation lacked funding from January though the remainder of the program year.)

Logistically, there was also the complex problem of the programs' misunderstanding of NTS' involvement in the dental services grants. The funding came directly from ACYF to the programs through the Regional offices of ACYF. Although NTS was involved only in notifying ACYF of the programs which should receive the funds, many programs perceived the evaluation and the dental services to be one and the same. NTS had presented the programs with the introductory information about the grants. This was to be the extent of NTS's involvement with the grants. However, the programs had first been told of the incentive grants during NTS's site visit and so linked the grants to the evaluation (appropriately) and to NTS (inappropriately).

Program staff had many questions and concerns about the incentive grants. They turned to NTS staff members for the answers. NTS in turn directed them to their Regional offices. However, all of this required much NTS staff time and often confused the programs. It also seemed to cause the program staff to question NTS's procedures because we could not always answer their questions.

It is possible that arrangements could be made so that the evaluation contractor could provide sufficient assistance in the provision of dental services to keep this "incentive" to families from being a disincentive for programs. Since reports from the programs regarding the use of the dental service supplemental grants went directly from the programs to their regional offices, NTS does not have access to information regarding the extent to which dental services were actually provided to the ASG Group children or the sufficiency of the funds for the intended purpose.

Whatever incentive is offered, there should be an early decision by ACYF regarding the nature of that incentive--before any preliminary contact with the sites is made. Further, once the decision is made, it must be maintained. The incentive should be something that the families want and that the local program will not be unduly burdened with if it must be provided through the program. (The nature of the incentive must also be such that it cannot be expected to affect the child and family outcome measures.)

6. Determine as early as possible the number of children who will need to be recruited in order to achieve treatment groups of the desired size.

While this recommendation seems readily apparent, it is not easily accomplished. The number varies widely from site to site. One must first project how many program spaces will be available for random will lead to strong evaluation design and implementation for future cohorts. Perhaps more than any other single lesson we learned that RANDOMIZATION IS A PROCESS NOT A PROCEDURE. By that we mean that randomization is not a simple task involving explanation, assistance in recruitment, and computerized drawing of names. Rather, it is a process that requires long pains-taking effort over an extended period, including at least the ten months prior to the start of random assignment. Assignment itself may take up to two months.

The evaluation staff must be willing to engage in a long difficult period in which personal relationships are formed with program staff. In a community-directed service program such as Head Start, true randomization can occur only when the evaluation staff have been able to build and maintain a strong working relationship with the Head Start staff--a relationship characterized by mutual trust and commitment to the best implementation of a strong research design, given the limitations of local conditions.

assignment (full program size minus number of anticipated "must serve" children). Then one must add to this number 60 or more; how many more than 60 additional applicants are needed is influenced by:

- The rate of refusal to participate in the ASG. Fortunately, this rate was very low, and can be decreased further by experienced field staff.
- The rate at which children leave the Head Start program. As spaces occur in the program, they must be offered to other children. Unless ACYF decides on other procedures, if the ASG contains the only other eligible applicants, they will be invited to enter the program, keeping the HSSG filled, but depleting the ASG. (An alternative would be to require the program to recruit the needed new applicants from outside the ASG.)
- The rate at which families leave the area or become impossible to locate. This depletes the HSSG and ASG.

7. Assist the programs, as needed and requested by the programs, in recruiting a sufficient number of eligible children.

The evaluator must be aware that many of the participating programs have difficulty in recruiting enough children to fill their program and keep it filled during the program year--let alone recruiting surplus children. In addition, there is a natural resistance to recruiting many more children than the program can serve--why raise the expectations of more people than you can satisfy? Further, many programs simply have little experience with recruiting while other programs have highly effective procedures, worked out over many years of experience.

On the other hand, the evaluator can only become involved in recruitment if the program desires the help of the evaluator. In some sites, the evaluator may be of assistance in conducting recruitment. In many more sites, the evaluator can provide resources and ideas for recruitment activities.

Even though NTS did not achieve random, assignment in all of the sites, many lessons were learned the first year, which together with continued cognizance of the procedures recommended here and elsewhere in the literature,

CHAPTER 6

CHARACTERISTICS OF THE CHILD MEASURES

The intent of this chapter is to examine the characteristics of the eleven child measures used in the pretest--ten subtests and one tester rating scale. Those measures are described in Chapter 2 of this report. The chapter consists of two major sections. In the first, each measure is discussed individually in terms of (a) the mean scores obtained by each age level of children (that is, the developmental nature of the measure), and (b) the interrelationships among the scale's items. The second section examines the relationships among the measures through intercorrelations and factor analyses.

We conclude that, on the whole, the group of measures performed at least as well as had been expected, based on the previous pilot test and generalizability study (Project Report 8). The progression of mean scores across age levels and the internal consistency reliability are adequate for each measure except Reading Readiness. The battery as a whole is able to reflect many dimensions of the preschool child's abilities, as shown through factor analysis.

As discussed in our generalizability study, we believe the battery would be substantially improved if it contained at least twice as many items, tapping the same abilities. In either form, we recommend this battery of tests for use at ages three, four, and five years in the longitudinal evaluation. We further recommend adding a test which would assess language dominance and language development, such as the Bilingual Syntax Measure.

As the age of the children in the evaluation increases, different measures will become appropriate. This will require the use of different tests of the abilities tested earlier as well as some entirely new measures. Unobtrusive measures such as those used by individual projects in the Consortium for

Longitudinal Studies (see Lazar and Darlington, 1978) should be considered (e.g., placement in special education, school attendance, retention in grade, drop-out rate).

Developmental and Internal Consistency Characteristics of Each Measure

Overview of the Tables

The mean scores on each subtest at each of eight six-month intervals of child age are shown in Tables 6-A through 6-D and 6.1 through 6.4[1] Table 6-A displays mean scores by age for the entire sample, while Tables 6-B through 6-D display the same information for BES, Head Start, and ASG groups respectively. For each of these tables, we recommend disregarding the lowest and highest age categories since sample sizes at those levels are extremely small. For BES, the age range is further restricted since BES programs serve four-year-olds almost exclusively.

The reader will note that, overall, the mean scores increase monotonically as the age levels increase. The most serious exceptions occur at the upper age levels, particularly between the 55-60 month and 61-66 month levels--and particularly within the BES programs. Our hypothesis is that when children over five years of age are in Head Start (rather than in kindergarten), it may be that they have been continued in Head Start for an extra year due to real or suspected delays in development. Therefore, though these children are older, they sometimes perform less well on the tests.

Measures of the consistency with which each subtest measures a single dimension of ability, item-total correlations and internal consistency reliability, are shown in Tables 6-E and 6.5 through 6.13. Table 6-E (6.5) contains these statistics for each measure for the entire sample. The same statistics are broken down by group (BES, HS, ASG) in Tables 6.6 through 6.8 and by age level in Tables 6.9 through 6.13.

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[1] As in Chapter 4, tables identified by number appear at the end of the chapter; tables identified by letter appear in the text and are duplicates of selected numbered tables.

Table 6-A. Child Subtest Mean Scores and Standard Deviations By Child Age Group for Entire Sample

		Child Age Level								
SUBTEST		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n	6	124	182	339	359	103	28	4	10
	mean	4.0	5.06	6.01	7.30	8.20	8.30	9.32	9.75	
	SD	3.16	2.26	2.34	2.14	1.96	1.80	1.58	.50	
Basic Information	n	6	124	182	339	359	103	28	4	7
	mean	.83	1.60	2.21	3.37	3.95	3.74*	5.21	5.75	
	SD	.98	1.41	1.69	1.72	1.72	1.81	1.98	1.26	
Number Readiness[1]	n	6	124	182	339	359	103	28	4	6(2)
	mean	.17	.14	.23	.80	1.22	1.41	2.42	2.75	
	SD	.41	.35	.48	1.03	1.19	1.37	1.50	1.50	
Verbal Memory	n	6	124	182	339	359	103	28	4	30
	mean	4.67	8.40	10.39	14.87	17.96	18.41	21.75	25.5	
	SD	5.50	7.12	7.85	8.06	6.55	7.08	4.63	2.38	
PIPS	n	6	124	182	339	359	103	28	4	7
	mean	.44	.53	.89	1.33	1.82	2.11	21.75	3.0	
	SD	.72	1.03	1.19	1.43	1.59	1.83	1.80	1.41	
Conceptual Grouping	n	6	124	182	339	359	103	28	4	12
	mean	1.83	2.57	3.33	4.27	5.26	5.15*	5.71	6.5	
	SD	1.33	2.11	1.98	2.14	2.22	2.43	2.44	1.91	
Reading Readiness[2]	n				339	359	103	28	4	4(0)
	mean				.63	.84	.93	1.50	2.5	
	SD				.75	.91	1.01	1.20	1.29	
Verbal Fluency	n	6	124	182	339	359	103	28	4	36
	mean	1.0	2.02	3.47	5.76	8.39	8.99	13.2	13.25	
	SD	1.09	2.77	3.89	4.08	5.35	5.81	5.16	3.09	
Pictorial Memory	n	6	124	182	339	359	103	28	4	6
	mean	.83	1.46	2.28	2.92	3.85	3.57*	4.64	4.25	
	SD	2.04	1.81	2.06	2.06	1.72	1.86	1.25	1.50	
Draw-A-Child	n	6	124	182	339	359	103	28	4	20
	mean	.83	.74	1.61	4.05	5.75	6.73	8.17	10.5	
	SD	2.04	1.95	2.44	3.76	3.81	4.06	4.32	3.0	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.
[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

This table appears as Table 6.1 in the table section of this chapter.

Table 6-8. Child Subtest Mean Scores and Standard Deviations
By Child Age Group for BES Sample

SUBTEST		Child Age Level 31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n			3	46	80	23			10
	mean			7.00	7.04	8.61	8.13*			
	SD			2.64	2.24	1.52	2.07			
Basic Information	n			3	46	80	23			7
	mean			2.33	3.30	4.18	3.65*			
	SD			0.57	1.53	1.59	1.58			
Number Readiness [1]	n			3	46	80	23			6(2)
	mean			.33	.82	1.43	1.21*			
	SD			.57	1.01	1.28	1.38			
Verbal Memory	n			3	46	80	23			30
	mean			12.0	12.76	17.38	16.65*			
	SD			4.58	8.28	6.10	7.23			
PIPS	n			3	46	80	23			7
	mean			2.66	1.15	2.06	2.13			
	SD			3.78	1.22	1.56	2.09			
Conceptual Grouping	n			3	46	80	23			12
	mean			5.66	4.76	5.82	5.08*			
	SD			.57	1.71	2.06	2.50			
Reading Readiness [2]	n				46	80	23			4(0)
	mean				.65	1.01	.95*			
	SD				.74	.99	1.14			
Verbal Fluency	n			3	46	80	23			36
	mean			7.33	5.84	9.18	9.08*			
	SD			8.38	5.19	4.98	5.54			
Pictorial Memory	n			3	46	80	23			6
	mean			3.0	3.02	3.38	3.86			
	SD			1.0	2.06	1.76	1.63			
Draw-A-Child	n			3	46	80	23			20
	mean			6.3	3.89	6.76	7.21			
	SD			4.51	3.50	3.66	4.56			

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.
[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

This table appears as Table 6.2 in the table section of this chapter.

Table 6-C. Child Subtest Mean Scores and Standard Deviations By Child Age Group for Head Start Sample

		Child Age Level								
SUBTEST		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n	4	83	126	247	244	71	25	3	10
	mean	5.00	5.20	6.10	7.41	8.15	8.24	9.44	10.00	
	SD	3.16	2.38	2.39	2.06	1.89	1.79	1.53	0.00	
Basic Information	n	4	83	126	247	244	71	25	3	7
	mean	1.00	1.70	2.21	3.28	3.98	3.60*	5.20	5.33	
	SD	1.15	1.45	1.64	1.68	1.76	1.92	1.92	1.55	
Number Readiness[1]	n	4	83	126	247	244	71	25	3	6(2)
	mean	0.00	0.12	0.25	0.72	1.16	1.44	2.36	3.00	
	SD	0.00	0.33	0.52	0.89	1.16	1.42	1.55	1.73	
Verbal Memory	n	4	83	126	247	244	71	25	3	30
	mean	6.00	7.10	10.44	15.00	18.07	18.39	21.92	24.67	
	SD	6.38	6.83	7.82	8.10	6.74	7.16	4.38	2.08	
PIPS	n	4	84	126	247	244	71	25	3	7
	mean	0.50	0.60	0.99	1.39	1.75	2.21	2.36	2.33	
	SD	0.58	1.83	1.18	1.45	1.58	1.83	1.89	0.58	
Conceptual Grouping	n	4	83	126	247	244	71	25	3	12
	mean	2.25	2.25	3.41	4.05	5.11	5.04*	5.88	6.00	
	SD	1.26	2.20	1.98	2.08	2.24	2.50	2.33	2.00	
Reading Readiness[2]	n				247	244	71	25	3	4(0)
	mean				0.56	0.77	0.96	1.44	2.67	
	SD				0.67	0.85	0.99	1.23	1.53	
Verbal Fluency	n	[illegible]	83	126	247	244	71	25	3	36
	mean	1.50	1.94	3.12	0.56	8.22	[illegible]	13.20	12.67	
	SD	1.00	2.82	3.66	4.70	5.39	6.22	5.39	3.51	
Pictorial Memory	n	4	83	126	247	244	71	25	3	6
	mean	1.25	1.28	2.11	2.79	4.02	3.34*	4.76	4.00	
	SD	2.50	1.76	1.99	2.07	1.71	1.95	1.09	1.73	
Draw-A-Child	n	4	83	126	247	244	71	25	3	20
	mean	1.25	0.81	1.65	4.08	5.66	6.44	8.04	9.67	
	SD	2.50	1.96	2.40	3.85	3.77	4.09	4.50	3.06	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.
[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

This table appears as Table 6.3 in the table section of this chapter.

Table 6-D. Child Subtest Mean Scores and Standard Deviations By Child Age Group for ASG Sample

		Child Age Level								
SUBTEST		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo in parentheses)
Block Building	n	2	41	53	46	35	9	3	1	10
	mean	2.0	4.78	5.77	6.95	7.62	9.22	8.33	9.0	
	SD	2.82	2.00	2.24	2.46	2.96	.83	2.08	-	
Basic Information	n	2	41	53	46	35	9	3	1	7
	mean	0.50	1.41	2.22	3.91	3.31*	5.11	5.33	7.0	
	SD	0.70	1.30	1.86	2.02	1.67	.93	3.05	-	
Number Readiness [1]	n	2	41	53	46	35	9	3	1	6(2)
	mean	0.50	0.19	0.17*	1.28	1.17*	1.77	3.0	2.0	
	SD	0.70	0.40	0.38	1.57	1.17	.97	1.0	-	
Verbal Memory	n	2	41	53	46	35	9	3	1	30
	mean	2.0	11.02	9.38*	16.28	18.54	23.11	20.33	28.0	
	SD	2.82	7.05	7.95	7.39	6.30	3.21	7.57	-	
PIPS	n	2	41	53	46	35	9	3	1	7
	mean	0.40	0.40	0.57	1.17	1.81	1.33	2.0	5.0	
	SD	0.89	.91	0.86	1.52	1.75	1.0	1.0	-	
Conceptual Grouping	n	2	41	53	46	35	9	3	1	12
	mean	1.0	2.61	3.01	4.95	5.05	6.22	4.33	8.0	
	SD	1.41	1.96	1.94	2.65	2.30	1.39	3.51	-	
Reading Readiness [2]	n				46	35	9	3	1	4(0)
	mean				1.0	0.88*	0.66	2.0	2.0	
	SD				1.07	1.05	.87	1.0	-	
Verbal Fluency	n	2	41	53	46	35	9	3	1	36
	mean	0.0	2.19	4.09	6.50	7.74	7.88	13.33	15.0	
	SD	0.0	2.68	4.04	5.58	5.81	.624	3.21	-	
Pictorial Memory	n	2	41	53	46	35	9	3	1	6
	mean	0.0	1.85	2.66	3.52	3.82	4.66	3.67	5.0	
	SD	0.0	1.87	2.25	1.92	1.56	1.22	2.31	-	
Draw-A-Child	n	2	41	53	46	35	9	3	1	20
	mean	0.0	0.61	1.26	4.08	4.11	7.88	9.33	13.0	
	SD	0.0	1.94	2.16	3.62	3.84	2.02	2.52	-	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.

[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

This table appears as Table 6.4 in the table section of this chapter.

Table 6-E. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations for Entire Sample

N = 1146

Child Measures

	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Alpha ure	.56	,63	.57	.84	one-item test	.58	.47	.81	one-item test	one-item test
al ions	All item-total correlations below are significant at the p <.01 level.									
	.52	.54	.54	.72	one-item test	.44	.72	.80	one-item test	one-item test
	.66	.60	.64	.69		.62	.65	.82		
	.64	.64	.58	.82		.55	.51	.82		
	.83	.50	.69	.76		.70	.62	.76		
		.52	.49	.84		.57				
		.58	.48	.85		.48				
		.48				.35				
		.27				.33				
						.32				

able appears as Table 6.5 in the tables section of this chapter.

Block Building

The child test session was begun with this four-item subtest, a measure of perceptual-motor ability from the McCarthy Scales of Children's Abilities (MSCA). The first item was passed by 99 percent of the children; though that item thus does little in terms of measurement, it does give each child an initial success.[2]

Scores on Block Building show a developmental trend, i.e., they increase steadily across the age levels (see Table 6-A) with one exception within the BES group (noted by an asterisk, see Table 6-B). By the 61-66 month level, scores are approaching the ceiling of the subtest, indicating that its use should be discontinued at this age.

Internal consistency for Block Building (Table 6-E and 6.5 through 6.13) is adequate but not exceptionally high for the entire sample, all groups, and all age levels except 61-66 months. Within the entire sample the estimate of internal consistency reliability (Cronbach Alpha) is .56, and item-total correlations range from .52 to .83 (see Table 6-E).

Basic Information

Basic Information is an eight-item subtest adapted from the Basic School Skills Inventory (BSSI). It is a measure of general knowledge, including shapes, colors, and body parts. Mean scores increase appropriately across the age levels, with few exceptions, and there are no apparent floor or ceiling effects within the 37-72 month age range (see Tables 6-A through 6-D).

The internal consistency reliability of Basic Information is adequate (Cronbach Alpha = .63) for the entire sample and the various subsamples (see Tables 6-E and 6.5 through 6.13). Item-total correlations are also adequate, except for Item 8, in which the child is asked to name the seven days of the week (r = .27 for entire sample and ranges from .04 to .44 across the subgroups). As will be seen in the discussion of the factor analysis later in this chapter, this item loads most highly on a factor on which none of the other items of this subtest load highly and which does have high loadings for items entailing counting, identifying numbers, identifying letters, and reciting the alphabet. In other words, this item contributes to the measurement of a different ability than do the other Basic Information items.

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[2] It should be noted, however, that there is little feedback in the testing session that would tell a child that she/he is responding to the items "correctly" or "incorrectly." The tester maintains a positive, encouraging attitude without indicating success or failure.

Number Readiness

This six-item subtest from the BSSI measures knowledge of number names, quantification and spatial reasoning. Only the first two items were administered to children under 48 months of age. Even so, the subtest shows a floor effect for children under 48 months. There is no ceiling effect within the age range of this sample, so the measure can be used from 48 through 72 months. The mean scores increase across the age levels, with a single exception within the BES group. Internal consistency is also adequate; Cronbach Alpha is .57 and the item-total correlations range from .49 to .69 for the entire sample (see Table 6-E). These statistics are not substantially different across the subgroups (see Tables 6.5 through 6.13).

Verbal Memory

Verbal Memory is a measure of auditory memory and of productive and receptive vocabulary. It is a subtest of the MSCA and consists of six items, four of which ask the child to repeat a sequence of three or four words and two of which ask for the repetition of sentences (partial credit may be given for each item). No floor or ceiling effects were observed, and mean scores increase across the age levels, with a single exception within the BES group.

The internal consistency of Verbal Memory is the highest for any of the subtests. Cronbach Alpha was .84 for the total sample and consistently high for all subgroups. Item-total correlations were also high (.69 to .85 for the total sample).

Preschool Interpersonal Problem Solving

During this subtest, the child is asked to help find a solution to a series of interpersonal "problems." She/he is asked how a given child can try to get a chance to play with a particular toy that another child is playing with. The score is based on the number of types of solutions described by the child in response to up to seven such situations. There is only one score (ranging from 0 to 7), so no estimate of internal consistency could be calculated.

The measure shows a developmental trend (increasing mean scores) across all age levels, and would be most useful from 49 through 72 months of age. For children younger than 49 months, there appears to be a floor effect--it is too difficult for such young children.

Conceptual Grouping

The sixth subtest in the pretest battery, the nine-item Conceptual Grouping (from the MSCA), was administered following a ten-minute mid-session break. The first four items deal with objects classified along one dimension at a time. (Dimensions are color, size, and shape.) Items 5 through 9 deal with two to three dimensions at a time, and Items 7 through 9 ask the child to deduce the dimensions relevant to the concept considered. Mean scores on Conceptual Grouping show no floor or ceiling effects for this age range, and the mean scores increase appropriately at each age level, except for a small decrease between the 55-60 and 61-66 month levels for all groups.

The estimates of internal consistency for this measure are ambiguous. The Cronbach Alpha for Conceptual Grouping is .58 for the entire sample, which is well within the range of Cronbach Alpha values for the other subtests. However, the item-total correlations for Conceptual Grouping are somewhat lower for this measure than for other measures (ranging from .32 to .70 for the entire sample).

As indicated by the factor analyses, discussed below, Conceptual Grouping appears to be composed of three sub-measures: (1) concepts of one dimension, items 1 through 4; (2) concepts of two or more dimensions, items 5 through 7; and (3) concepts of two or more dimensions, with deductive reasoning required, items 7 through 9. Accordingly, we calculated the Cronbach Alpha and item total estimates of internal consistency separately for each of these three subtests of items. The separate Cronbach Alpha values were substantially lower (.49, .44, and .24 for the three subtests respectively) than that for the total measure. (Cronbach Alpha values are negatively affected by a reduced number of items.) Conversely, the item-subtotal correlation coefficients were substantially higher than the item total correlations. These item-subtotal correlations can be seen in Table 6.35.

Our recommendation is that the Conceptual Grouping measure should be included in the testing battery; and (1) it sould be treated analytically as three separate measures, and (2) additional items should be generated such that each of the three sub-measures contains at least six items.

Reading Readiness

Reading Readiness was administered to children over four years of age. The four-item subtest was adapted by NTS from the BSSI. Though the mean scores do increase across the age levels, there is a substantial floor effect--the subtest is too difficult for most children until they are nearly six years old. As such, it is not a useful subtest for use in this evaluation. Further, internal consistency is only moderate for this restricted age range. As will be noted later in this chapter, items 2 and 4 (identify letters and recite the alphabet) were shown through factor analysis to form a relatively strong factor with similar items from Basic Information and Number Readiness. It is possible that those two Reading Readiness items might be retained in the battery.

Verbal Fluency

This four-item subtest from the MSCA has excellent measurement characteristics in terms of developmental progression and internal consistency. There is no floor or ceiling effect; the scores increase steadily with age; and internal consistency reliability is high (Cronbach Alpha = .81 for entire sample).

Pictoral Memory

Pictoral Memory is a one-item subtest from the MSCA. In it a child is asked to recall six objects, the pictures of which are shown to her/him on a card and named by the tester. Mean scores show an acceptable increase with age, with one reversal at the same age juncture which caused problems on other subtests (between the 55-60 and 61-66 month levels). No internal consistency statistics could be calculated since there is only one item.

Draw-A-Child

This is also a one-item subtest from the MSCA. Without exception, the mean scores increase across age levels for children from 37 thrugh 72 months.

There may be a floor effect below 49 months, however, since at age levels below 49 months the standard deviations of the mean scores are greater than the mean scores.

Relationships Among the Measures

Intercorrelations of Subtest Scores

Tables 6-F and 6.14 through 6.29 contain the intercorrelation matrices of the subtest scores, for the entire sample, and within certain subgroups as follows:

Entire Sample	Table 6.14 (Table 6-F)
BES, HS, and ASG Groups	Tables 6.15 - 6.17
Six-Month Age Levels	Tables 6.18 - 6.23
Male, Female	Tables 6.24 - 6.26
Ethnic Groups	Tables 6.26 - 6.29

Examining these correlation matrices is useful in determining how the subtests relate to one another. Note that the magnitude of correlations in all these tables tends to be in the .20 to .60 range; therefore, within these tables a "low correlation" is one in the .20 to .30 range, and we speak of a correlation above .50 as "high."

Basic Information and Verbal Fluency correlated most highly with other sub-tests and are probably the most general performance scales of the battery (Table 6-F, 6.14). Since the Preschool Interpersonal Problem-Solving Tasks (PIPS) was the only social skill measure in the battery, it was expected to be correlated at relatively low levels with the other measures. This expectation was confirmed; the correlations of PIPS with the other measures constituted the most consistently low pattern of correlations in the overall matrix (Table 6-F). An unexpectedly high correlation was found between Draw-A-Child and Verbal Fluency.

The above patterns of corelations were fairly consistent across the evaluation groups--BES (with lower overall correlations), Head Start and ASG (with higher overall correlations)--and across the subsamples of males, females, Whites and Blacks. Since the variance in the subtest scores is necessarily restricted when the sample is divided into age levels, all correlations in those matrices tend to be much lower.

Table 6-F. Intercorrelations of all Subtest Scores for Entire Sample (N = 1146)

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.44	.36	.43	.28	.46	.33	.40	.40	.46
Basic Information			.52	.53	.32	.55	.43	.56	.42	.46
Number Readiness				.42	.28	.41	.52	.47	.27	.42
Verbal Memory					.41	.46	.34	.57	.49	.43
PIPS						.29	.27	.46	.28	.36
Conceptual Grouping							.41	.51	.38	.45
Reading Readiness								.44	.31	.43
Verbal Fluency									.49	.52
Pictorial Memory										.38
Draw-a-Child										

With this sample size, correlation coefficients greater than .062 are significant at the .05 level.

This table appears as Table 6.14 in the tables section of this chapter.

The correlation matrices for two ethnic categories, Hispanic and Native American, had patterns rather different from those of the White and Black subgroups. The Hispanic and Native American samples were, however, quite small (63 and 15 children, respectively).

Factor Analysis of Item Scores

The interrelationships among the measures were also examined through factor analysis. The item scores were factor analyzed using a principal components solution. Factors accounting for two or more percent of the variance in the scores were retained for rotation, a promax oblique rotation. The factor analysis was performed for the entire sample (Table 6-G, 6.30) and for each of the three groups, BES, Head Start, and ASG (Tables 6.32 through 6.33).

The factor analysis performed for the entire sample yielded eight distinct factors, as shown in Table 6-G (6.30), which account for 46 percent of the variance in the items. We defined the items on a factor as those items which had a factor loading value of .30 or higher.

This factor structure is remarkably well aligned with the constructs for which the measures were selected. Factor 1 clearly represents Child Ratings, the tester's rating of the child's behavior on eight dimensions. Factor encompasses six rote "readiness" items, including number and alphabet recognition and recitation. Factor 3 is exclusively verbal memory. Factor 5 represents verbal fluency including the Verbal Fluency items, PIPS, Pictorial Memory, and the counting item from Number Readiness.

Factors 4, 6, and 8 are classification factors of differing levels of complexity. Items loading on Factor 4 are from the Basic Information and Conceptual Grouping subtests and deal with one dimension of objects at a time (size, shape, color, and body parts). Factor 6 involves identifying objects having two given dimensions, and Factor 8 items require more advanced "set" categorization by deductive reasoning.

Finally, Factor 7 is clearly composed of items measuring perceptual-motor skills, including all Block Building items and the "match words" item of Reading Readiness.

The factor structures of the group data analyses are very similar to that of the entire sample. The Child Ratings factor was consistent and powerful throughout. Rote Readiness is not a strong factor for the ASG sample; there

Table 6-G. Factor Analysis[a] of Scores on Child Measure Items (N=1087)

Factor Loading of Subtest Items
(highest loadings underscored)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Fact
Block Building:								
1. 6 Block Tower	.07	-.09	.18	.11	.06	-.02	-.49	-.02
2. 3 Block Tower	.04	-.05	.01	.22	.05	-.01	-.67	.03
3. 5 Block Building	-.02	.08	.04	-.08	.06	.02	-.67	-.04
4. 5 Block House	-.02	-.07	.02	-.04	-.13	.05	-.59	.05
Basic Information:								
1. Knows Age	.09	.05	.14	.04	.05	.10	-.25	-.09
2. Knows Body Parts	.10	-.07	.04	.31	-.16	.02	.08	-.12
3. Recog 4 Colors	.00	.12	-.06	.34	-.01	.25	-.04	-.18
4. Knows Birthday	-.04	.25	.14	.28	-.26	-.06	.13	-.10
5. Recog 3 Coins	.05	-.08	.17	.06	-.04	.17	.04	-.12
6. Recog 3 Shapes	.05	-.01	-.02	.34	-.05	-.12	.13	.15
7. Knows Left/Right	.03	.03	.00	.01	-.09	-.01	-.08	.01
8. Knows 7 Days	.01	.38	.08	-.04	-.06	.11	.13	.01
Number Readiness:								
1. Counts to 20	-.01	.56	.07	-.04	.04	-.09	.01	.01
2. Large Less Long	-.01	.04	.21	-.06	.08	.05	.02	-.04
3. Recog Num 1-10	.04	.66	.05	.00	.11	-.02	-.01	-.08
4. Counts 7 Blocks	-.04	.26	.05	-.12	-.34	.04	-.17	-.06
5. Knows 1st-3rd	-.03	.17	-.03	-.08	-.04	.01	-.05	.15
6. ID # of Blocks	.04	.52	.04	-.11	.04	-.02	-.10	.02
Verbal Memory:								
1. Recalls 3 Words-1	.01	.01	.75	.00	-.03	.03	.02	.03
2. Recalls 3 Words-2	-.02	.02	.79	.02	.13	.00	-.08	.03
3. Recalls 4 Words-1	.00	.00	.81	.07	.01	-.01	-.01	-.01
4. Recalls 4 Words-2	-.02	.00	.80	.03	.01	-.03	.01	.02
5. Recalls Sentence-1	.04	-.03	.65	-.02	-.12	-.01	-.01	-.01
6. Recalls Sentence-2	.06	.01	.62	-.07	-.18	-.01	.01	.02

This table appears as Table 6.30 in the table section of this chapter.

Table 6-G (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor
Preschool Interpersonal Problem-Solving Task[b]	.14	-.09	.04	-.13	*-.60*	-.03	-.07	.00
Conceptual Grouping:								
1. Big/Little Blocks	.00	.04	.06	*.75*	.03	-.07	-.06	.07
2. Rd/Yel Bl Blocks	-.02	-.05	.00	*.54*	-.01	.25	.00	-.06
3. Sq/Round Blocks	-.04	.04	.01	*.69*	.02	-.05	-.06	.09
4. All Square Blocks	.04	-.07	-.03	*.41*	-.14	-.02	-.03	.00
5. Big Yellow Blocks	-.01	.00	.02	.01	-.01	*.76*	-.06	.02
6. Big Round Red Blocks	-.04	-.01	-.04	-.08	.01	*.75*	-.01	.13
7. Blocks Does Not Go	.11	.00	.00	.08	.06	*.50*	.08	*.44*
8. One Block Goes Best	-.05	-.05	.04	.02	-.10	.18	.00	*.63*
9. Two Blocks Go Best	.01	.00	.02	.04	.00	-.07	-.05	*.71*
Reading Readiness:								
1. Match Typed Word	-.03	.15	-.17	-.04	-.29	.00	*-.41*	.05
2. ID 12 Letters	.00	*.71*	.04	.07	-.02	-.02	.05	-.02
3. Seq Picture Story	.07	.10	.08	-.12	-.01	-.01	.03	.05
4. Recites Alphabet	.00	*.58*	.02	.14	-.09	.12	-.04	.05
Verbal Fluency:								
1. Things to Eat	.06	-.05	-.02	-.02	*-.85*	.06	.04	.01
2. Animal Names	.01	.08	-.02	.12	*-.73*	-.01	.04	.02
3. Things to Wear	-.03	-.02	.03	.04	*-.71*	-.03	-.03	.05
4. Things to Ride	-.08	.02	.04	.03	*-.69*	-.03	.06	.07
Pictorial Memory[b]	.07	-.02	.20	.18	*-.33*	-.05	-.21	.01
Draw-A-Child[b]	.00	.02	-.06	.06	*-.40*	-.02	-.32	-.09

Table 6-6 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	
Child Ratings:									
1. Attentiveness	-.75	-.04	.09	-.17	-.13	.08	.07	-.01	
2. Emotionality	-.83	.03	.04	.02	.03	.01	.00	.02	
3. Persistence	-.68	-.09	-.06	.01	.07	-.02	-.06	-.04	
4. Response Speed	-.73	.00	-.03	-.02	.09	.01	.00	.04	
5. Talkativeness	-.56	.02	-.08	.11	.28	-.02	-.12	.05	
6. Speech Comp	-.44	-.01	-.14	.02	.12	.00	.05	.01	
7. Inital Reaction	-.80	.03	-.02	.13	-.02	-.03	.04	-.01	
8. Tester Reaction	-.84	-.01	.04	-.09	-.13	-.01	.03	-.04	
Percent of Variance Accounted for by Factor	23%	5%	4%	3%	3%	3%	2%	2%	Cumulative 46%

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[a] Principal components solution, promax rotation.

[b] These measures have no separate item scores; one total score per measure.

may be more vairance in this group due to the variety of educational settings. The absence of equivalent factors in the BES sample for three of the entire sample factors is probably an artifact of the children's ages in BES. These factors represent the lower level skills: simple categorization and very easy perceptual-motor tasks. The reduction in variance among these older children's scores would result in no identifiable factors. Likewise, the younger children in the ASG sample may have found the advanced "set" categorization items of Factor 8 too difficult.

We interpret the factor structure, particularly that for the entire sample, as a confirmation that the testing battery measures the diversity of abilities it was intended to measure. However, other--competing--interpretations are certainly possible, the most prominent of which is that the factors represent merely the different methods of questioning and responding in the testing battery. There is some evidence to support this view. Table 6-H (6.34) lists the items on each factor and indicates which of seven question-response patterns each item requires. As shown in Table 6-H, Factors 1, 3, 6, and 8 each contain items with a single question-response pattern.

There is, however, evidence which refutes the "factors are methods" interpretation and which we believe supports our factor structure interpretation. First, though four factors have single question-response patterns, the remaining four factors are composed of multiple patterns. Second, except for the child rating factor (Factor 1) no factor contains all the items of a particular pattern. That is, the factors do differentiate between items of the same question-response pattern according to the differing abilities called for. For example, items which use the "verbal question and points-to-response" pattern appear on Factors 2, 3, and 5 (see Table 6-H). Similarly, items which use the "verbal-plus-props question and points-to-response" pattern appear on factors 2, 4, 6, 7, and 8. Further, the nine items of Conceptual Grouping, all of which have nearly identical question-response patterns, break neatly into three separate factors corresponding to discrete levels of difficulty.

Third, certain question-response patterns are most appropriate for the assessment of particular abilities; so there is a natural overlap of ability areas and patterns. For example, verbal fluency must be assessed at this age by items that require a verbal response. The question could be either verbal or verbal-plus-prop; but selection of props would be very difficult if one is

Table 6-H, Description of Items on Factors by Method of Questioning (Q) and the Nature of the Required Response (R)

Items on Each Factor Identified by Measure/Item Number	Q-Verbal R-Verbal	Q-Verbal R-Point to	Q-Verbal R-Draw	Q-Verbal & Prop R-Verbal	Q-Verbal & Prop R-Point to	Q-Verbal & Prop R-Move Object(s) or Picture(s)	Rating
Factor 1							
All eight items on Child Rating Scale							X
Factor 2							
Basic Information/8	X						
Number Readiness/1	X						
Number Readiness/3				X			
Number Readiness/6					number		
Reading Readiness/2				X			
Reading Readiness/4	X						
Factor 3							
Verbal Memory/1	X						
Verbal Memory/2	X						
Verbal Memory/3	X						
Verbal Memory/4	X						
Verbal Memory/5	X						
Verbal Memory/6	X						
Factor 4							
Basic Information/2		self					
Basic Information/3				X			
Basic Information/6					picture		
Conceptual Grouping/1						object	
Conceptual Grouping/2						object	
Conceptual Grouping/3						object	
Conceptual Grouping/4						object	
Factor 5							
Number Readiness/4				X			
PIPS				X			
Verbal Fluency/1	X						
Verbal Fluency/2	X						
Verbal Fluency/3	X						
Verbal Fluency/4	X						
Pictorial Memory				X			
Draw-A-Child			X				
Factor 6							
Conceptual Grouping/5						objects	
Conceptual Grouping/6					objects	objects	
Conceptual Grouping/7						objects	
Factor 7							
Block Building/1						objects	
Block Building/2						objects	
Block Building/3						objects	
Block Building/4						objects	
Reading Readiness/1					word		
Factor 8							
Conceptual Grouping/7					objects	objects	
Conceptual Grouping/8						objects	
Conceptual Grouping/9						objects	

This table appears as Table 6.34 in table section.

to avoid cuing or restricting the child's responses. In summary, we believe the factor structure is supportive of the usefulness of the chosen test battery; nevertheless, as with the other data and analyses presented in this report, the reader is encouraged to study the analyses and results and to formulate her/his own interpretation.

Internal Consistency of the Factors

To further describe the eight factors derived through factor analysis of the item scores for the entire sample, we calculated "factor total scores" and then computed the item-total correlations. Factor total scores were derived by adding together the scores on the items of each factor for each child. These are contained in Table 6.35. These item-total correlations are generally higher than those of the original scales.

The numerically identified tables follow and are the final section of this chapter.

Table 6.1. Child Subtest Mean Scores and Standard Deviations By Child Age Group for Entire Sample.

		Child Age Level								
SUBTEST		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n	6	124	182	339	359	103	28	4	10
	mean	4.0	5.06	6.01	7.30	8.20	8.30	9.32	9.75	
	SD	3.16	2.26	2.34	2.14	1.96	1.80	1.58	.50	
Basic Information	n	6	124	182	339	359	103	28	4	7
	mean	.83	1.60	2.21	3.37	3.95	3.74*	5.21	5.75	
	SD	.98	1.41	1.69	1.72	1.72	1.81	1.98	1.26	
Number Readiness [1]	n	6	124	182	339	359	103	28	4	6(2)
	mean	.17	.14	.23	.80	1.22	1.41	2.42	2.75	
	SD	.41	.35	.48	1.03	1.19	1.37	1.50	1.50	
Verbal Memory	n	6	124	182	339	359	103	28	4	30
	mean	4.67	8.40	10.39	14.87	17.96	18.41	21.75	25.5	
	SD	5.50	7.12	7.85	8.06	6.55	7.08	4.63	2.38	
PIPS	n	6	124	182	339	359	103	28	4	7
	mean	.44	.53	.89	1.33	1.82	2.11	21.75	3.0	
	SD	.72	1.03	1.19	1.43	1.59	1.83	1.80	1.41	
Conceptual Grouping	n	6	124	182	339	359	103	28	4	12
	mean	1.83	2.57	3.33	4.27	5.26	5.15*	5.71	6.5	
	SD	1.33	2.11	1.98	2.14	2.22	2.43	2.44	1.91	
Reading Readiness [2]	n				339	359	103	28	4	4(0)
	mean				.63	.84	.93	1.50	2.5	
	SD				.75	.91	1.01	1.20	1.29	
Verbal Fluency	n	6	124	182	339	359	103	28	4	36
	mean	1.0	2.02	3.47	5.76	8.39	8.99	13.2	13.25	
	SD	1.09	2.77	3.89	4.08	5.35	5.81	5.16	3.09	
Pictorial Memory	n	6	124	182	339	359	103	28	4	6
	mean	.83	1.46	2.28	2.92	3.85	3.57*	4.64	4.25	
	SD	2.04	1.81	2.06	2.06	1.72	1.86	1.25	1.50	
Draw-A-Child	n	6	124	182	339	359	103	28	4	20
	mean	.83	.74	1.61	4.05	5.75	6.73	8.17	10.5	
	SD	2.04	1.95	2.44	3.76	3.81	4.06	4.32	3.0	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.

[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

Table 6.2. Child Subtest Mean Scores and Standard Deviations
By Child Age Group for BES Sample

		Child Age Level								
SUBTEST		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n			3	46	80	23			10
	mean			7.00	7.04	8.61	8.13*			
	SD			2.64	2.24	1.52	2.07			
Basic Information	n			3	46	80	23			7
	mean			2.33	3.30	4.18	3.65*			
	SD			0.57	1.53	1.59	1.58			
Number Readiness [1]	n			3	46	80	23			6(2)
	mean			.33	.82	1.43	1.21*			
	SD			.57	1.01	1.28	1.38			
Verbal Memory	n			3	46	80	23			30
	mean			12.0	12.76	17.38	16.65*			
	SD			4.58	8.28	6.10	7.23			
PIPS	n			3	46	80	23			7
	mean			2.66	1.15	2.06	2.13			
	SD			3.78	1.22	1.56	2.09			
Conceptual Grouping	n			3	46	80	23			12
	mean			5.66	4.76	5.82	5.08*			
	SD			.57	1.71	2.06	2.50			
Reading Readiness [2]	n				46	80	23			4(0)
	mean				.65	1.01	.95*			
	SD				.74	.93	1.14			
Verbal Fluency	n			3	46	80	23			36
	mean			7.33	5.84	9.18	9.08*			
	SD			8.38	5.19	4.98	5.54			
Pictorial Memory	n			3	46	80	23			6
	mean			3.0	3.02	3.38	3.86			
	SD			1.0	2.06	1.76	1.63			
Draw-A-Child	n			3	46	80	23			20
	mean			6.3	3.89	6.76	7.21			
	SD			4.51	3.50	3.66	4.56			

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.
[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

Table 6.3. Child Subtest Mean Scores and Standard Deviations By Child Age Group for Head Start Sample

SUBTEST		Child Age Level 31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n	4	83	126	247	244	71	25	3	10
	mean	5.00	5.20	6.10	7.41	8.15	8.24	9.44	10.00	
	SD	3.16	2.38	2.39	2.06	1.89	1.79	1.53	0.00	
Basic Information	n	4	83	126	247	244	71	25	3	7
	mean	1.00	1.70	2.21	3.28	3.98	3.60*	5.20	5.33	
	SD	1.15	1.45	1.64	1.68	1.76	1.92	1.92	1.55	
Number Readiness[1]	n	4	83	126	247	244	71	25	3	6(2)
	mean	0.00	0.12	0.25	0.72	1.16	1.44	2.36	3.00	
	SD	0.00	0.33	0.52	0.89	1.16	1.42	1.55	1.73	
Verbal Memory	n	4	83	126	247	244	71	25	3	30
	mean	6.00	7.10	10.44	15.00	18.07	18.39	21.92	24.67	
	SD	6.38	6.83	7.82	8.10	6.74	7.16	4.38	2.08	
PIPS	n	4	84	126	247	244	71	25	3	7
	mean	0.50	0.60	0.99	1.39	1.75	2.21	2.36	2.33	
	SD	0.58	1.83	1.18	1.45	1.58	1.83	1.89	0.58	
Conceptual Grouping	n	4	83	126	247	244	71	25	3	12
	mean	2.25	2.25	3.41	4.05	5.11	5.04*	5.88	6.00	
	SD	1.26	2.20	1.98	2.08	2.24	2.50	2.33	2.00	
Reading Readiness[2]	n				247	244	71	25	3	4(0)
	mean				0.56	0.77	0.96	1.44	2.67	
	SD				0.67	0.85	0.99	1.23	1.53	
Verbal Fluency	n	1	83	126	247	244	71	25	3	36
	mean	1.50	1.94	3.12	0.56	8.22	9.10	13.20	12.67	
	SD	1.00	2.82	3.66	4.70	5.39	6.22	5.39	3.51	
Pictorial Memory	n	4	83	126	247	244	71	25	3	6
	mean	1.25	1.28	2.11	2.79	4.02	3.34*	4.76	4.00	
	SD	2.50	1.76	1.99	2.07	1.71	1.95	1.09	1.73	
Draw-A-Child	n	4	83	126	247	244	71	25	3	20
	mean	1.25	0.81	1.65	4.08	5.66	6.44	8.04	9.67	
	SD	2.50	1.96	2.40	3.85	3.77	4.09	4.50	[illegible].06	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.

[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

Table 6.4. Child Subtest Mean Scores and Standard Deviations By Child Age Group for ASG Sample

SUBTEST		Child Age Level								
		31-36 months	37-42 months	43-48 months	49-54 months	55-60 months	61-66 months	67-72 months	Over 72 months	MAXIMUM POINTS (Maximum points for children under 48 mo. in parentheses)
Block Building	n	2	41	53	46	35	9	3	1	10
	mean	2.0	4.78	5.77	6.95	7.62	9.22	8.33	9.0	
	SD	2.82	2.00	2.24	2.46	2.96	.83	2.08	-	
Basic Information	n	2	41	53	46	35	9	3	1	7
	mean	0.50	1.41	2.22	3.91	3.31*	5.11	5.33	7.0	
	SD	0.70	1.30	1.86	2.02	1.67	.93	3.05	-	
Number Readiness [1]	n	2	41	53	46	35	9	3	1	6(2)
	mean	0.50	0.19	0.17*	1.28	1.17*	1.77	3.0	2.0	
	SD	0.70	0.40	0.38	1.57	1.17	.97	1.0	-	
Verbal Memory	n	2	41	53	46	35	9	3	1	30
	mean	2.0	11.02	9.38*	16.28	18.54	23.11	20.33	28.0	
	SD	2.82	7.05	7.95	7.39	6.30	3.21	7.57	-	
PIPS	n	2	41	53	46	35	9	3	1	7
	mean	0.40	0.40	0.57	1.17	1.81	1.33	2.0	5.0	
	SD	0.89	.91	0.86	1.52	1.75	1.0	1.0	-	
Conceptual Grouping	n	2	41	53	46	35	9	3	1	12
	mean	1.0	2.61	3.01	4.95	5.05	6.22	4.33	8.0	
	SD	1.41	1.96	1.94	2.65	2.30	1.39	3.51	-	
Reading Readiness [2]	n				46	35	9	3	1	4(0)
	mean				1.0	0.88*	0.66	2.0	2.0	
	SD				1.07	1.05	.87	1.0	-	
Verbal Fluency	n	2	41	53	46	35	9	3	1	36
	mean	0.0	2.19	4.09	6.50	7.74	7.88	13.33	15.0	
	SD	0.0	2.68	4.04	5.58	5.81	.624	3.21	-	
Pictorial Memory	n	2	41	53	46	35	9	3	1	6
	mean	0.0	1.85	2.66	3.52	3.82	4.66	3.67	5.0	
	SD	0.0	1.87	2.25	1.92	1.56	1.22	2.31	-	
Draw-A-Child	n	2	41	53	46	35	9	3	1	20
	mean	0.0	0.61	1.26	4.08	4.11	7.88	9.33	13.0	
	SD	0.0	1.94	2.16	3.62	3.84	2.02	2.52	-	

[1] Items 3 and 4 of Number Readiness were not administered to children less than 48 months of age.

[2] Reading Readiness was not to be administered to children less than 48 months of age.

*An asterisk indicates a decrease (unexpected) from mean score at adjacent younger age level. Such a decrease is not indicated if it is based on a sample of less than 10.

Table 6.5. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations for Entire Sample

N = 1146

Child Measures

	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.56	.63	.57	.84	one-item test	.58	.47	.81	one-item test	one-item test
Item-Total Correlations	All item-total correlations below are significant at the p <.01 level.									
Item 1	.52	.54	.54	.72	one-item test	.44	.72	.80	one-item test	one-item test
Item 2	.66	.60	.64	.69		.62	.65	.82		
Item 3	.64	.64	.58	.82		.55	.51	.82		
Item 4	.83	.50	.69	.76		.70	.62	.76		
Item 5		.52	.49	.84		.57				
Item 6		.58	.48	.85		.48				
Item 7		.48				.35				
Item 8		.27				.33				
Item 9						.32				

Table 6.6. Internal Consistency Reliability (Cronbach Alpha)
and Item-Total Correlations

Group: RES N = 153

Child Measures

	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.42	.50	.53	.77	one-item test	.47	.46	.78	one-item test	one-item test
Item-Total Correlations	With exceptions noted all item-total correlations below are significant at the p <.01 level.									
Item 1	.30	.42	.48	.65	one-item test	.23	.64	.75	one-item test	one-item test
Item 2	.54	.45	.65	.62		.49	.69	.82		
Item 3	.67	.63	.59	.72		.46	.56	.77		
Item 4	.85	.53	.68	.64		.60	.63	.77		
Item 5		.49	.50	.79		.59				
Item 6		.58	.32	.82		.61				
Item 7		.42				.32				
Item 8		.07*				.42				
Item 9						.23				

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*Non-Significant

Table 6.7. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: Head Start N = 803

	Child Measures									
	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.54	.62	.55	.85	one-item test	.58	.43	.81	one-item test	one-item test
Item-Total Correlations	All item-total correlations below are significant at the p <.01 level.									
Item 1	.55	.53	.56	.72	one-item test	.44	.72	.80	one-item test	one-item test
Item 2	.62	.58	.62	.70		.61	.64	.82		
Item 3	.62	.64	.59	.82		.55	.50	.82		
Item 4	.82	.50	.67	.78		.70	.58	.75		
Item 5		.54	.48	.85		.57				
Item 6		.57	.47	.85		.46				
Item 7		.48				.34				
Item 8		.25				.30				
Item 9						.35				

Table 6.8. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: ASG N = 190

Child Measures

	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.63	.71	.66	.85	one-item test	.64	.61	.84	one-item test	one-item test
Item-Total Correlations	All item-total correlations below are significant at the p <.01 level.									
Item 1	.51	.59	.49	.77	one-item test	.45	.77	.83	one-item test	one-item test
Item 2	.76	.72	.70	.71		.69	.64	.83		
Item 3	.67	.65	.51	.84		.58	.52	.85		
Item 4	.83	.53	.76	.77		.71	.77	.78		
Item 5		.49	.54	.81		.59				
Item 6		.60	.66	.84		.47				
Item 7		.55				.41				
Item 8		.44				.40				
Item 9						.31				

Table 6.9. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: 37-42 months N = 124

Child Measures

	Block Building	Basic Information	Number Readiness[1]	Verbal Memory	PIPS	Conceptual Grouping	Reading[1] Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.50	.51	--	.88	one-item test	.65	--	.70	one-item test	one-item test
Item-Total Correlations	With exceptions noted all item-total correlations below are significant at the p <.01 level.									
Item 1	.60	.50	--	.77	one-item test	.54	--	.73	one-item test	one-item test
Item 2	.73	.61	--	.76		.63	--	.61		
Item 3	.59	.44	--	.84		.57	--	.80		
Item 4	.63	.59	--	.74		.67	--	.77		
Item 5		.36	--	.86		.54				
Item 6		.61	--	.83		.27				
Item 7		.46				.26				
Item 8		.04*				.45				
Item 9						.55				

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*Non-Significant

[1] Items 3 and 4 of Number Readiness and all of Reading Readiness were not administered to children less than 48 months of age.

Table 6.10. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: 43-48 months N = 182

	Child Measures									
	Block Building	Basic Information	Number Readiness[1]	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness[1]	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.48	.58	--	.86	one-item test	.47	--	.78	one-item test	one-item test
Item-Total Correlations	With exceptions noted all item-total correlations below are significant at the p <.01 level.									
Item 1	.60	.57	--	.68	one-item test	.53	--	.83	one-item test	one-item test
Item 2	.67	.62	--	.72		.60	--	.81		
Item 3	.48	.53	--	.84		.50	--	.78		
Item 4	.75	.40	--	.77		.61	--	.69		
Item 5		.49	--	.85		.42				
Item 6		.58	--	.84		.31				
Item 7		.48				.35				
Item 8		.25				.30				
Item 9						.34				

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*Non-Significant

[1] Items 3 and 4 of Number Readiness and all of Reading Readiness were not administered to children less than 49 months old.

Table 6.11. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: 49-54 months N = 339

	Child Measures									
	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.44	.51	.48	.84	one-item test	.51	.21	.76	one-item test	one-item test
Item-Total Correlations	All item-total correlations below are significant at the p <.01 level.									
Item 1	.45	.47	.48	.71	one-item test	.35	.68	.77	one-item test	one-item test
Item 2	.57	.60	.63	.68		.57	.56	.82		
Item 3	.61	.61	.48	.81		.60	.41	.75		
Item 4	.81	.47	.63	.78		.63	.51	.72		
Item 5		.45	.43	.82		.53				
Item 6		.54	.54	.85		.41				
Item 7		.35				.33				
Item 8		.23				.36				
Item 9						.34				

Table 6.12. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: 55-60 months N = 359

	Child Measures									
	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.49	.52	.47	.72	one-item test	.50	.39	.76	one-item test	one-item test
Item-Total Correlations	All item-total correlations below are significant at the p <.01 level.									
Item 1	.51	.44	.47	.56	one-item test	.34	.62	.75	one-item test	one-item test
Item 2	.58	.50	.63	.52		.54	.63	.76		
Item 3	.64	.59	.59	.68		.46	.52	.81		
Item 4	.81	.46	.62	.67		.65	.65	.74		
Item 5		.50	.46	.76		.61				
Item 6		.58	.37	.79		.57				
Item 7		.47				.33				
Item 8		.21				.28				
Item 9						.28				

Table 6.13. Internal Consistency Reliability (Cronbach Alpha) and Item-Total Correlations

Group: 61-66 months N = 103

Child Measures

	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Cronbach Alpha for Measure	.32	.56	.58	.80	one-item test	.59	.50	.76	one-item test	one-item test
Item-Total Correlations	With exceptions noted all Item-total correlations below are significant to the p <.01 level.									
Item 1	.13*	.53	.60	.70	one-item test	.37	.72	.74	one-item test	one-item test
Item 2	.45	.63	.56	.62		.61	.74	.85		
Item 3	.62	.57	.58	.82		.53	.42	.77		
Item 4	.86	.55	.66	.68		.74	.63	.68		
Item 5		.44	.61	.82		.58				
Item 6		.49	.42	.81		.59				
Item 7		.44				.36				
Item 8		.31				.16*				
Item 9						.40				

Table 6.14. Intercorrelations of all Subtest Scores for Entire Sample (N = 1146)

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.44	.36	.43	.28	.46	.33	.40	.40	.46
Basic Information			.52	.53	.32	.55	.43	.56	.42	.46
Number Readiness				.42	.28	.41	.52	.47	.27	.42
Verbal Memory					.41	.46	.34	.57	.49	.43
PIPS						.29	.27	.46	.28	.36
Conceptual Grouping							.41	.51	.38	.45
Reading Readiness								.44	.31	.43
Verbal Fluency									.49	.52
Pictorial Memory										.38
Draw-a-Child										

With this sample size, correlation coefficients greater than .062 are significant at the .05 level.

Table 6.15. Intercorrelations of all Subtest Scores
Group: BES (N = 153)

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.32	.31	.31	.13	.39	.14	.20	.27	.40
Basic Information			.39	.41	.28	.56	.34	.37	.27	.35
Number Readiness				.32	.20	.42	.42	.35	.11	.33
Verbal Memory					.35	.36	.20	.48	.33	.32
PIPS						.15	.22	.50	.15	.30
Conceptual Grouping							.37	.26	.18	.32
Reading Readiness								.27	.24	.32
Verbal Fluency									.30	.46
Pictorial Memory										.26
Draw-a-Child										

With this sample size, correlation coefficients greater than .159 are significant at the .05 level.

Table 6.16. Intercorrelations of all Subtest Scores
Group: Head Start (N = 803)

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.42	.34	.44	.27	.43	.33	.38	.40	.44
Basic Information			.52	.53	.30	.51	.43	.57	.42	.44
Number Readiness				.45	.27	.37	.52	.47	.29	.40
Verbal Memory					.41	.45	.36	.59	.50	.43
PIPS						.28	.25	.42	.30	.34
Conceptual Grouping							.37	.50	.38	.44
Reading Readiness								.44	.31	.42
Verbal Fluency									.51	.50
Pictorial Memory										.41
Draw-a-Child										

With this sample size, correlation coefficients greater than .088 are significant at the .05 level.

Table 6.17. Intercorrelations of all Subtest Scores
Group: ASG (N = 190)

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.51	.45	.43	.33	.52	.41	.51	.45	.47
Basic Information			.58	.56	.37	.67	.49	.61	.51	.55
Number Readiness				.38	.35	.54	.56	.56	.32	.55
Verbal Memory					.46	.54	.35	.51	.52	.49
PIPS						.36	.34	.48	.32	.44
Conceptual Grouping							.54	.64	.49	.51
Reading Readiness								.56	.34	.50
Verbal Fluency									.51	.58
Pictorial Memory										.39
Draw-a-Child										

With this sample size, correlation coefficients greater than .159 are significant at the .05 level.

Table 6.18. Intercorrelations of all Subtest Scores

Sample: Age Level = 37-42 months

n = 124

Subtask	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.25	.13	.24	.05	.37	.11	.21	.39	.20
Basic Information			.21	.29	.06	.38	.08	.42	.39	.31
Number Readiness				.16	.03	.27	-.06	.13	.20	.08
Verbal Memory					.17	.30	.00	.42	.48	.06
PIPS						.13	.03	.17	.13	.14
Conceptual Grouping							.03	.25	.33	.29
Reading Readiness								.13	.07	.05
Verbal Fluency									.48	.35
Pictorial Memory										.21
Draw-a-Child										

With this sample size, correlation coefficients greater than .172 are significant at the .05 level.

Table 6.19. Intercorrelations of all Subtest Scores

Sample: Age Level = 43-48 months

n = 182

Subtests	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.32	.11	.24	.16	.24	.06	.25	.26	.34
Basic Information			.28	.38	.21	.46	.09	.45	.35	.33
Number Readiness				.24	.07	.24	.21	.25	-.01	.19
Verbal Memory					.30	.32	.03	.50	.39	.28
PIPS						.24	.05	.35	.16	.26
Conceptual Grouping							.05	.42	.30	.25
Reading Readiness								.13	-.01	.08
Verbal Fluency									.44	.41
Pictorial Memory										.26
Draw-a-Child										

With this sample size, correlation coefficients greater than .159 are significant at the .05 level.

Table 6.20. Intercorrelations of all Subtest Scores

Sample: Age Level = 49-54 months

n = 339

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.28	.25	.22	.10	.27	.21	.20	.29	.26
Basic Information			.41	.47	.11	.49	.30	.48	.31	.22
Number Readiness				.28	.07	.35	.38	.36	.19	.21
Verbal Memory					.35	.35	.20	.50	.45	.24
PIPS						.14	.13	.31	.29	.18
Conceptual Grouping							.32	.44	.31	.34
Reading Readiness								.36	.28	.24
Verbal Fluency									.41	.31
Pictorial Memory										.26
Draw-a-Child										

With this sample size, correlation coefficients greater than .113 are significant at the .05 level.

Table 6.21. Intercorrelations of all Subtest Scores

Sample: Age Level = 55-60 months

n = 359

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.29	.23	.33	.22	.40	.15	.27	.20	.35
Basic Information			.40	.32	.24	.42	.30	.41	.24	.33
Number Readiness				.32	.21	.32	.37	.33	.12	.28
Verbal Memory					.28	.32	.21	.39	.22	.26
PIPS						.14	.14	.39	.13	.25
Conceptual Grouping							.35	.41	.16	.31
Reading Readiness								.27	.17	.27
Verbal Fluency									.30	.37
Pictorial Memory										.19
Draw-a-Child										

With this sample size, correlation coefficients greater than .113 are significant at the .05 level.

Table 6.22. Intercorrelations of all Subtest Scores

Sample: Age Level = 61-66 months

n = 103

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.34	.39	.36	.15	.37	.28	.22	.11	.39
Basic Information			.59	.57	.37	.52	.49	.51	.22	.45
Number Readiness				.41	.29	.30	.55	.37	.12	.34
Verbal Memory					.39	.43	.31	.56	.34	.52
PIPS						.28	.25	.43	.04	.38
Conceptual Grouping							.34	.37	.32	.38
Reading Readiness								.41	.13	.39
Verbal Fluency									.43	.56
Pictorial Memory										.36
Draw-a-Child										

With this sample size, correlation coefficients greater than .195 are significant at the .05 level.

Table 6.23. Intercorrelations of all Subtest Scores

Sample: Age Level - 67-72 months

n = 28

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.06	-.26	.26	.22	.39	.14	.09	.26	.19
Basic Information			.58	.54	.19	.49	.42	.39	.52	.36
Number Readiness				.37	.04	.22	.49	.38	.34	.32
Verbal Memory					.35	.59	.25	.37	.38	.23
PIPS						.35	.26	.47	.46	.17
Conceptual Grouping							.48	.34	.53	.33
Reading Readiness								.35	.37	.49
Verbal Fluency									.52	.24
Pictorial Memory										.27
Draw-a-Child										

With this sample size, correlation coefficients greater than .361 are significant at the .05 level.

Table 6.24. Intercorrelations of all Subtest Scores

Sample: Female

n = 566

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.41	.36	.40	.30	.46	.33	.37	.37	.46
Basic Information			.52	.53	.36	.54	.46	.59	.38	.50
Number Readiness				.44	.30	.45	.54	.51	.28	.46
Verbal Memory					.42	.48	.35	.58	.46	.42
PIPS						.29	.26	.45	.28	.40
Conceptual Grouping							.45	.52	.36	.50
Reading Readiness								.48	.29	.46
Verbal Fluency									.46	.56
Pictorial Memory										.36
Draw-a-Child										

With this sample size, correlation coefficients greater than .088 are significant at the .05 level.

Table 6.25. Intercorrelations of all Subtest Scores

Sample: Male

n = 578

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.47	.36	.45	.27	.45	.33	.42	.41	.46
Basic Information			.51	.52	.28	.56	.40	.54	.47	.41
Number Readiness				.40	.25	.38	.50	.44	.27	.39
Verbal Memory					.41	.44	.32	.56	.52	.43
PIPS						.29	.29	.47	.30	.34
Conceptual Grouping							.37	.50	.40	.39
Reading Readiness								.40	.33	.39
Verbal Fluency									.52	.50
Pictorial Memory										.40
Draw-a-Child										

With this sample size, correlation coefficients greater than .088 are significant at the .05 level.

Table 6.26. Intercorrelations of all Subtest Scores

Sample: Ethnicity = White, Not Hispanic

n = 368

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.45	.32	.45	.27	.43	.28	.41	.43	.46
Basic Information			.50	.53	.30	.57	.42	.53	.46	.45
Number Readiness				.44	.27	.41	.52	.44	.27	.38
Verbal Memory					.40	.47	.35	.56	.46	.44
PIPS						.31	.26	.48	.32	.33
Conceptual Grouping							.38	.49	.39	.48
Reading Readiness								.46	.31	.39
Verbal Fluency									.54	.55
Pictorial Memory										.45
Draw-a-Child										

With this sample size, correlation coefficients greater than .113 are significant at the .05 level.

Table 6.27. Intercorrelations of all Subtest Scores

Sample: Ethnicity = Black, Not Hispanic

n = 670

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.45	.40	.45	.30	.46	.37	.41	.40	.44
Basic Information			.53	.54	.33	.56	.47	.58	.41	.48
Number Readiness				.42	.29	.44	.54	.52	.29	.46
Verbal Memory					.44	.48	.36	.55	.49	.45
PIPS						.39	.29	.45	.27	.38
Conceptual Grouping							.45	.53	.40	.42
Reading Readiness								.47	.32	.46
Verbal Fluency									.45	.52
Pictorial Memory										.36
Draw-a-Child										

With this sample size, correlation coefficients greater than .088 are significant at the .05 level.

Table 6.28. Intercorrelations of all Subtest Scores

Sample: Ethnicity = Hispanic

n = 63

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.61	.32	.56	.30	.56	.24	.47	.50	.52
Basic Information			.39	.54	.30	.48	.20	.49	.51	.49
Number Readiness				.32	.23	.19	.26	.35	.19	.44
Verbal Memory					.40	.59	.17	.72	.62	.56
PIPS						.37	.15	.47	.37	.44
Conceptual Grouping							.24	.64	.55	.52
Reading Readiness								.20	.22	.40
Verbal Fluency									.60	.63
Pictorial Memory										.52
Draw-a-Child										

With this sample size, correlation coefficients greater than .250 are significant at the .05 level.

Table 6.29. Intercorrelations of all Subtest Scores

Sample: Ethnicity = American Indian

n = 15

Subtest	Block Building	Basic Information	Number Readiness	Verbal Memory	PIPS	Conceptual Grouping	Reading Readiness	Verbal Fluency	Pictorial Memory	Draw-a-Child
Block Building		.63	.30	.22	.23	.41	.43	.38	.15	.58
Basic Information			.73	.52	.38	.63	.51	.43	-.15	.67
Number Readiness				.50	.24	.17	.34	.21	-.04	.34
Verbal Memory					.66	-.09	.31	.69	.18	.41
PIPS						-.03	.25	.60	-.13	.48
Conceptual Grouping							.35	.18	-.33	.30
Reading Readiness								.26	.14	.52
Verbal Fluency									.26	.42
Pictorial Memory										.07
Draw-a-Child										

With this sample size, correlation coefficients greater than .482 are significant at the .05 level.

Table 6.30. Factor Analysis[a] of Scores on Child Measure Items (N=1087)

Factor Loading of Subtest Items
(highest loadings underscored)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Block Building:								
1. 6 Block Tower	.07	-.09	.18	.11	.06	-.02	*-.49*	-.02
2. 3 Block Tower	.04	-.05	.01	.22	.05	-.01	*-.67*	.03
3. 5 Block Building	-.02	.08	.04	-.08	.06	.02	*-.67*	-.04
4. 5 Block House	-.02	-.07	.02	-.04	-.13	.05	*-.59*	.05
Basic Information:								
1. Knows Age	.09	.05	.14	.04	.05	.10	-.25	-.09
2. Knows Body Parts	.10	-.07	.04	*.31*	-.16	.02	.08	-.12
3. Recog 4 Colors	.00	.12	-.06	*.34*	-.01	.25	-.04	-.18
4. Knows Birthday	-.04	.25	.14	.28	-.26	-.06	.13	-.10
5. Recog 3 Coins	.05	-.08	.17	.06	-.04	.17	.04	-.12
6. Recog 3 Shapes	.05	-.01	-.02	*.34*	-.05	-.12	.13	.15
7. Knows Left/Right	.03	.03	.00	.01	-.09	-.01	-.08	.01
8. Knows 7 Days	.01	*.38*	.08	-.04	-.06	.11	.13	.01
Number Readiness:								
1. Counts to 20	-.01	*.56*	.07	-.04	.04	-.09	.01	.01
2. Large Less Long	-.01	.04	.21	-.06	.08	.05	.02	-.04
3. Recog Num 1-10	.04	*.66*	.05	.00	.11	-.02	-.01	-.08
4. Counts 7 Blocks	-.04	.26	.05	-.12	*-.34*	.04	-.17	-.06
5. Knows 1st-3rd	-.03	.17	-.03	-.08	-.04	.01	-.05	.15
6. ID # of Blocks	.04	*.52*	.04	-.11	.04	-.02	-.10	.02
Verbal Memory:								
1. Recalls 3 Words-1	.01	.01	*.75*	.00	-.03	.03	.02	.03
2. Recalls 3 Words-2	-.02	.02	*.79*	.02	.13	.00	-.08	.03
3. Recalls 4 Words-1	.00	.00	*.81*	.07	.01	-.01	-.01	-.01
4. Recalls 4 Words-2	-.02	.00	*.80*	.03	.01	-.03	.01	.02
5. Recalls Sentence-1	.04	-.03	*.65*	-.02	-.12	-.01	-.01	-.01
6. Recalls Sentence-2	.06	.01	*.62*	-.07	-.18	-.01	.01	.02

Table 6.30. (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Preschool Interpersonal Problem-Solving Task[b]	.14	-.09	.04	-.13	*-.60*	-.03	-.07	.00
Conceptual Grouping:								
1. Big/Little Blocks	.00	.04	.06	*.75*	.03	-.07	-.06	.07
2. Rd/Yel Bl Blocks	-.02	-.05	.00	*.54*	-.01	.25	.00	-.06
3. Sq/Round Blocks	-.04	.04	.01	*.69*	.02	-.05	-.06	.09
4. All Square Blocks	.04	-.07	-.03	*.41*	-.14	-.02	-.03	.00
5. Big Yellow Blocks	-.01	.00	.02	.01	-.01	*.76*	-.06	.02
6. Big Round Red Blocks	-.04	-.01	-.04	-.08	.01	*.75*	-.01	.13
7. Blocks Does Not Go	.11	.00	.00	.08	.06	*.50*	.08	*.44*
8. One Block Goes Best	-.05	-.05	.04	.02	-.10	.18	.00	*.63*
9. Two Blocks Go Best	.01	.00	.02	.04	.00	-.07	-.05	*.71*
Reading Readiness:								
1. Match Typed Word	-.03	.15	-.17	-.04	-.29	.00	*-.41*	.05
2. ID 12 Letters	.00	*.71*	.04	.07	-.02	-.02	.05	-.02
3. Seq Picture Story	.07	.10	.08	-.12	-.01	-.01	.03	.05
4. Recites Alphabet	.00	*.58*	.02	.14	-.09	.12	-.04	.05
Verbal Fluency:								
1. Things to Eat	.06	-.05	-.02	-.02	*-.85*	.06	.04	.01
2. Animal Names	.01	.08	-.02	.12	*-.73*	-.01	.04	.02
3. Things to Wear	-.03	-.02	.03	.04	*-.71*	-.03	-.03	.05
4. Things to Ride	-.08	.02	.04	.03	*-.69*	-.03	.06	.07
Pictorial Memory[b]	.07	-.02	.20	.18	*-.33*	-.05	-.21	.01
Draw-A-Child[b]	.00	.02	-.06	.06	*-.40*	-.02	-.32	-.09

Table 6.30. (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	
Child Ratings:									
1. Attentiveness	-.75	-.04	.09	-.17	-.13	.08	.07	-.01	
2. Emotionality	-.83	.03	.04	.02	.03	.01	.00	.02	
3. Persistence	-.68	-.09	-.06	.01	.07	-.02	-.06	-.04	
4. Response Speed	-.73	.00	-.03	-.02	.09	.01	.00	.04	
5. Talkativeness	-.56	.02	-.08	.11	.28	-.02	-.12	.05	
6. Speech Comp	-.44	-.01	-.14	.02	.12	.00	.05	.01	
7. Inital Reaction	-.80	.03	-.02	.13	-.02	-.03	.04	-.01	
8. Tester Reaction	-.84	-.01	.04	-.09	-.13	-.01	.03	-.04	
Percent of Variance Accounted for by Factor	23%	5%	4%	3%	3%	3%	2%	2%	Cumulative 46%

[a] Principal components solution, promax rotation.

[b] These measures have no separate item scores; one total score per measure.

Table 6.31. Factor Analysis[a] of Scores on Child Measure Items, for BES Group (N = 149)

Factor Loading of Subtest Items
(highest loadings underscored)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
	17%	6	5	4	4	3	3	3
Block Building:								
1. 6 Block Tower	-.01	.02	.04	.19	.16	.23	.57	.10
2. 3 Block Tower	.05	-.38	-.09	.10	.16	-.03	.27	.09
3. 5 Block Tower	.03	-.17	-.10	.25	.19	.13	.23	-.15
4. 5 Block House	-.14	-.15	.02	.10	-.10	.11	.37	.27
Basic Information:								
1. Knows Age	-.00	.10	-.14	.10	.17	.22	.22	.11
2. Knows Body Parts	-.20	-.16	-.02	.14	.72	.03	.02	.04
3. Recog 4 Colors	-.11	-.17	-.10	.14	.06	.15	.15	.12
4. Knows Birthday	-.17	.07	-.03	.13	.02	.05	.13	-.02
5. Recog 3 Coins	-.07	-.05	.03	-.03	-.02	-.18	.70	-.04
6. Recog 3 Shapes	-.12	-.17	-.12	.01	.17	.06	.07	.00
7. Knows Left/Right	-.04	-.04	.03	.00	.04	.16	-.02	.03
8. Knows 7 Days	-.06	-.21	.18	.18	-.57	.29	-.06	-.15
Number Readiness:								
1. Counts to 20	-.16	-.08	-.18	.12	-.07	.64	-.02	-.16
2. Large Less Long	-.10	-.05	-.31	.16	-.10	.30	.17	-.13
3. Recog Num 1-10	.08	.00	-.73	.08	.09	.03	-.00	.13
4. Counts 7 Blocks	-.19	.12	-.29	.19	-.01	.21	.02	.10
5. Knows 1st-3rd	-.11	-.04	-.13	-.06	.01	-.04	-.07	.40
6. ID # of Blocks	-.00	-.09	-.05	-.04	.14	.07	-.13	.01
Verbal Memory:								
1. Recalls 3 Words-1	-.18	-.09	-.19	.66	[illegible]	.03	.13	.00
2. Recalls 3 Words-2	-.12	-.11	-.09	.63	[illegible]	.12	.31	-.12
3. Recalls 4 Words-1	-.25	-.08	.12	.66	.04	-.02	.02	.00
4. Recalls 4 Words-2	.02	-.07	.15	.71	.04	.05	.04	.24
5. Recalls Sentence-1	-.22	.23	-.07	.66	-.06	.03	-.09	-.03
6. Recalls Sentence-2	-.10	-.11	-.07	.60	.10	.17	-.04	.06

Table 6.31 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Preschool Interpersonal Problem-Solving Task^b	-.67	-.11	-.14	.12	-.09	-.04	.02	-.00
Conceptual Grouping:								
1. Big/Little Blocks	-.15	-.00	-.01	.06	.08	.05	.02	-.13
2. Rd/Yel/Bl Blocks	-.06	-.11	-.11	.15	-.05	-.06	.05	-.05
3. Sq/Round Blocks	-.02	-.24	-.03	.17	.00	-.04	.17	.04
4. All Square Blocks	-.00	-.22	-.04	.16	-.02	.16	.56	-.03
5. Big Yellow Blocks	-.02	.05	-.20	.15	.22	.08	-.02	-.06
6. Big Round Red Blocks	-.10	-.03	-.08	-.04	-.21	.05	.17	.13
7. Blocks Does Not Go	-.07	-.16	-.13	.10	.09	.04	.01	.75
8. One Block Goes Best	-.03	-.04	.08	.02	.16	.52	.01	.35
9. Two Blocks Go Best	.07	.08	-.09	-.11	-.01	.00	-.11	.13
Reading Readiness:								
1. Match Typed Word	-.04	-.31	.05	-.11	.10	.38	-.06	-.24
2. ID 12 Letters	-.21	-.16	-.77	-.04	.11	.13	.03	-.02
3. Seq Picture Story	.02	.00	-.15	.07	-.09	.64	.02	.21
4. Recites Alphabet	-.25	-.14	-.63	-.00	-.16	.15	-.12	.14
Verbal Fluency:								
1. Things to Eat	-.72	-.09	.00	.04	.17	-.01	-.06	-.05
2. Animal Names	-.74	-.14	-.16	.21	.06	.11	.05	-.04
3. Things to Wear	-.59	-.03	.05	.14	.20	.24	.04	.16
4. Things to Ride	-.69	.01	-.04	.21	-.09	-.02	.11	.22
Pictorial Memory^b	-.14	-.26	-.06	.31	.09	.04	.06	.06
Draw-A-Child^b	-.42	-.12	-.01	.08	.12	.33	.31	-.11

Table 6.31 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Child Rating:								
1. Attentiveness	.06	.76	.06	-.02	.01	-.11	-.13	-.07
2. Emotionality	.19	.70	-.05	-.14	.00	.01	-.19	-.05
3. Persistence	.12	.66	.23	-.26	.09	-.06	-.13	.11
4. Response Speed	.10	.66	-.00	-.19	-.18	-.04	.13	-.18
5. Talkativeness	.26	.21	.00	-.17	.04	.15	-.02	.05
6. Speech Comp	.23	.38	.04	-.13	-.07	-.11	.01	.11
7. Initial Reaction	-.13	.46	-.03	-.07	-.08	.05	-.06	.03
8. Tester Reaction	.02	.62	.07	-.01	.01	.00	.05	-.04

[a] Principal components solution, promax rotation.

[b] These measures have no separate item scores; one total score per measure.

Table 6.32. Factor Analysis[a] of Scores on Child Measure Items, for Head Start Group

(N = 762)

Factor Loading of Subtest Items
(highest loadings underscored)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
	23%	5	4	4	3	3	2	2	2
Block Building:									
1. 6 Block Tower	.16	.03	.25	-.22	-.02	-.06	-.45	-.01	.00
2. 3 Block Tower	.14	.00	.14	-.30	.05	-.05	-.61	-.02	-.04
3. 5 Block Tower	.05	-.13	.10	.02	-.04	-.07	-.60	.02	-.12
4. 5 Block House	.14	-.04	.19	-.04	.02	-.20	-.55	-.07	-.07
Basic Information:									
1. Knows Age	.19	-.05	.17	-.01	-.18	-.05	-.31	-.09	-.21
2. Knows Body Parts	.23	.05	.15	-.24	-.09	-.19	-.01	.26	-.14
3. Recog 4 Colors	.11	-.18	.07	-.39	-.11	-.16	-.10	.14	-.41
4. Knows Birthday	.11	-.15	.16	-.08	.05	-.23	-.02	.02	.07
5. Recog 3 Coins	.12	-.07	.19	-.06	.06	-.20	-.12	.20	[illegible]
6. Recog 3 Shapes	.17	-.11	.15	-.24	-.03	-.13	-.03	.11	-.07
7. Knows Left/Right	.14	-.11	.07	.05	.32	-.12	-.20	.35	.07
8. Knows 7 Days	.00	-.30	.12	-.04	.08	-.18	.07	.08	-.12
Number Readiness:									
1. Counts to 20	.05	-.61	.10	-.03	.06	-.05	-.04	-.04	.02
2. Large Less Long	.07	-.09	.23	-.05	-.09	-.09	-.07	-.06	-.10
3. Recog Num 1-10	.08	-.68	.04	-.05	-.09	-.09	-.03	.09	-.11
4. Counts 7 Blocks	.14	-.37	.19	-.01	-.10	-.40	-.16	.06	-.12
5. Knows 1st-3rd	.04	-.17	.03	-.03	.09	-.02	-.02	-.08	.02
6. ID # of Blocks	.06	-.53	.08	.11	.19	-.06	-.10	.19	-.03
Verbal Memory:									
1. Recalls 3 Words-1	.18	-.07	.71	-.08	.06	-.22	-.06	.04	-.06
2. Recalls 3 Words-2	.14	-.08	.73	-.12	.08	-.06	-.16	.02	-.05
3. Recalls 4 Words-1	.19	-.08	.77	-.13	-.02	-.15	-.14	-.03	-.08
4. Recalls 4 Words-2	.16	-.10	.74	-.09	.04	-.17	-.12	-.01	-.07
5. Recalls Sentence-1	.20	-.06	.67	-.09	.04	-.30	-.10	.03	-.02
6. Recalls Sentence-2	.24	-.10	.65	-.04	.03	-.27	-.09	-.03	-.04

Table 6.32 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Preschool Interpersonal Problem-Solving Task[b]	.28	-.01	.22	-.02	-.05	-.50	-.09	-.04	-.00
Conceptual Grouping:									
1. Big/Little Blocks	.09	-.02	.12	-.68	.22	-.05	-.14	.06	.08
2. Rd/Yel/Bl Blocks	.12	-.04	.14	-.60	-.04	-.18	-.05	.08	-.29
3. Sq/Round Blocks	.12	-.09	.11	-.65	.01	-.08	-.11	-.12	-.03
4. All Square Blocks	.22	-.09	.15	-.48	-.12	-.29	-.11	-.09	-.12
5. Big Yellow Blocks	.09	-.03	.10	-.06	.12	-.11	-.14	.02	-.72
6. Big Round Red Blocks	.03	-.15	.06	-.05	.07	-.12	-.05	-.04	-.67
7. Blocks Does Not Go	.13	-.05	.08	-.07	.55	.03	.02	-.10	-.36
8. One Block Goes Best	.01	.04	.07	-.04	.70	-.07	-.00	-.07	-.02
9. Two Blocks Go Best	.01	.03	.02	-.02	.16	-.06	-.09	-.82	-.01
Reading Readiness:									
1. Match Typed Word	.00	-.27	.01	-.11	.16	-.36	.32	-.02	.02
2. ID 12 Letters	.04	-.72	.10	-.13	-.03	-.16	-.02	-.00	-.08
3. Seq Picture Story	.13	-.08	.09	.01	-.03	-.09	-.08	-.05	-.06
4. Recites Alphabet	.08	-.58	.08	-.12	-.03	-.07	-.06	-.21	-.08
Verbal Fluency:									
1. Things to Eat	.24	-.07	.22	-.06	.07	-.70	-.03	.06	-.11
2. Animal Names	.21	-.18	.21	-.18	.00	-.63	-.05	-.03	-.11
3. Things to Wear	.19	-.10	.24	-.11	.00	-.63	-.14	-.02	-.13
4. Things to Ride	.13	-.13	.22	-.07	.08	-.58	-.05	-.10	-.05
Pictorial Memory[b]	.22	-.01	.29	-.21	.16	-.43	-.29	.12	-.00
Draw-A-Child[b]	.19	-.18	.15	-.21	-.06	-.43	-.35	.08	-.16

Table 6.32 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Child Rating:									
1. Attentiveness	-.71	.01	-.06	.13	-.06	.05	.23	-.02	.03
2. Emotionality	-.79	.07	-.13	.10	-.01	.15	.08	-.02	.02
3. Persistence	-.67	.13	-.20	.09	-.14	.22	.03	-.04	.06
4. Response Speed	-.71	.06	-.21	.11	.00	.22	.06	-.06	.05
5. Talkativeness	-.56	.07	-.22	.06	.10	.31	-.15	.08	-.00
6. Speech Comp	-.45	.03	-.27	.06	.14	.21	.05	.09	.14
7. Initial Reaction	-.75	.03	-.16	-.01	-.00	.12	.07	.05	.03
8. Tester Reaction	-.77	.04	-.14	.13	-.11	.05	.15	-.04	.08

[a] Principal components solution, promax oblique rotation.

[b] These measures have no separate item scores; one total score per measure.

Table 6.33. Factor Analysis^a of Scores on Child Measure Items, for ASG Group
(N = 176)

Factor Loading of Subtest Items
(highest loadings underscored)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
	27%	7	4	4	3	3	3	3	2
Block Building:									
1. 6 Block Tower	-.05	-.17	-.07	.06	.00	.10	.02	.05	-.80
2. 3 Block Tower	-.17	- 19	-.22	.01	-.13	.16	-.01	-.13	-.37
3. 5 Block Tower	-.16	-.17	-.18	.03	.24	-.12	.05	-.11	-.10
4. 5 Block House	-.34	-.08	-.06	.07	-.08	.15	-.20	-.05	-.11
Basic Information:									
1. Knows Age	-.01	-.23	-.27	.19	-.03	-.04	-.06	-.03	.10
2. Knows Body Parts	-.28	-.20	-.31	.22	-.06	.21	.03	-.11	-.04
3. Recog 4 Colors	-.31	-.11	-.10	-.04	-.06	.09	.07	-.36	-.01
4. Knows Birthday	-.15	-.07	-.14	.71	-.00	.16	-.11	-.03	-.02
5. Recog 3 Coins	-.06	-.22	-.09	.10	.11	.58	.35	-.01	.03
6. Recog 3 Shapes	-.30	-.08	.01	-.07	.11	.33	.07	-.03	-.11
7. Knows Left/Right	-.32	-.08	-.14	.06	-.15	.35	-.13	.06	.27
8. Knows 7 Days	-.10	-.11	-.03	.02	-.27	-.02	-.34	-.55	-.05
Number Readiness:									
1. Counts to 20	-.23	-.03	-.06	.09	.12	.09	01	-.79	.14
2. Large Less Long	-.15	-.13	-.16	.12	-.13	-.03	-.03	-.45	-.11
3. Recog Num 1-10	-.14	-.13	-.01	.06	-.04	.09	.08	-.00	.12
4. Counts 7 Blocks	-.46	-.02	-.17	.31	.10	-.11	-.15	-.20	-.10
5. Knows 1st-3rd	-.14	-.01	-.03	.58	.20	-.15	.07	-.14	-.06
6. ID # of Blocks	-.27	-.05	-.11	-.03	.22	.00	-.08	-.52	-.12
Verbal Memory:									
1. Recalls 3 Words-1	-.10	-.23	-.74	.18	-.12	.13	-.10	-.10	.07
2. Recalls 3 Words-2	-.10	-.22	-.70	.01	-.01	.11	-.09	-.08	-.10
3. Recalls 4 Words-1	-.13	-.28	-.76	.03	-.01	.10	.02	-.13	-.07
4. Recalls 4 Words-2	-.29	-.20	-.74	-.04	-.01	.09	.02	.06	.01
5. Recalls Sentence-1	-.09	-.32	-.59	.23	-.10	.04	-.03	-.23	-.13
6. Recalls Sentence-2	-.19	-.27	-.65	.06	.04	-.03	-.19	.06	-.00

Table 6.33 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Preschool Interpersonal Problem-Solving Task^b	-.53	-.29	-.29	-.08	.23	-.00	-.02	.10	-.04
Conceptual Grouping:									
1. Big/Little Blocks	-.08	-.21	-.39	-.03	.02	.52	.15	-.06	-.07
2. Rd/Yel/Bl Blocks	-.20	-.20	-.08	.32	-.22	.33	-.07	-.07	-.10
3. Sq/Round Blocks	-.20	.02	-.32	.06	.00	.53	-.19	.00	-.22
4. All Square Blocks	-.40	-.03	-.13	.30	-.03	.37	.04	-.09	-.05
5. Big Yellow Blocks	-.34	-.25	-.13	.10	-.15	-.05	-.40	-.26	.07
6. Big Round Red Blocks	-.13	-.11	-.09	.05	.07	.14	-.74	-.07	.02
7. Blocks Does Not Go	-.12	-.13	-.05	.01	-.09	.03	-.24	-.01	-.16
8. One Block Goes Best	-.21	-.01	-.11	.18	-.30	-.07	-.31	.02	-.27
9. Two Blocks Go Best	.06	-.11	-.12	.04	.09	-.05	.01	-.01	.04
Reading Readiness:									
1. Match Typed Word	-.45	.01	-.06	-.09	-.02	-.22	-.15	.04	-.09
2. ID 12 Letters	-.15	-.07	-.10	.21	-.23	.11	-.12	-.20	.01
3. Seq Picture Story	-.16	-.05	-.10	-.08	-.82	-.04	.04	.03	-.01
4. Recites Alphabet	-.44	-.03	-.21	-.03	-.08	-.08	-.11	-.28	.02
Verbal Fluency:									
1. Things to Eat	-.72	-.23	-.12	.12	-.04	.04	-.17	-.09	.03
2. Animal Names	-.70	-.19	-.17	.02	-.11	.08	-.07	-.24	-.17
3. Things to Wear	-.62	-.20	-.18	.16	-.19	.21	-.12	-.17	.00
4. Things to Ride	-.71	-.10	-.15	.11	-.12	.20	.04	-.20	.00
Pictorial Memory^b	-.33	-.23	-.40	.13	-.14	.24	-.05	-.08	.09
Draw-A-Child^b	-.54	-.13	-.23	.19	-.00	.09	.09	-.04	.03

Table 6.33 (Continued)

Measure: Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Child Rating:									
1. Attentiveness	.07	.70	.17	-.11	.13	-.19	-.21	.17	.12
2. Emotionality	.12	.77	.16	-.07	.01	.09	.06	-.07	.01
3. Persistence	.18	.74	.23	-.06	.07	-.05	.17	.04	.07
4. Response Speed	.12	.83	.19	-.02	.02	-.08	.00	.04	.05
5. Talkativeness	.12	.69	.10	-.01	-.12	-.01	.26	.00	.01
6. Speech Comp	.07	.58	.21	.03	.02	-.12	-.08	.14	-.05
7. Initial Reaction	.05	.77	.20	.01	-.03	-.01	.08	.03	.04
8. Tester Reaction	.13	.82	.15	.01	.08	-.15	-.07	.05	.05

[a] Principal components solution, promax rotation.

[b] These measures have no separate item scores; one total score per measure.

Table 6.34 Description of Items on Factors by Method of Questioning (Q) and the Nature of the Required Response (R)

Items on Each Factor Identified by Measure/Item Number	Q-Verbal R-Verbal	Q-Verbal R-Point to	Q-Verbal R-Draw	Q-Verbal & Prop R-Verbal	Q-Verbal & Prop R-Point to	Q-Verbal & Prop R-Move Object(s) or Picture(s)	Rating
Factor 1							
All eight items on Child Rating Scale							x
Factor 2							
Basic Information/8	x						
Number Readiness/1	x						
Number Readiness/3				x			
Number Readiness/6					number		
Reading Readiness/2				x			
Reading Readiness/4	x						
Factor 3							
Verbal Memory/1	x						
Verbal Memory/2	x						
Verbal Memory/3	x						
Verbal Memory/4	x						
Verbal Memory/5	x						
Verbal Memory/6	x						
Factor 4							
Basic Information/2		self					
Basic Information/3				x			
Basic Information/6					picture		
Conceptual Grouping/1						object	
Conceptual Grouping/2						object	
Conceptual Grouping/3						object	
Conceptual Grouping/4						object	
Factor 5							
Number Readiness/4				x			
PIPS				x			
Verbal Fluency/1	x						
Verbal Fluency/2	x						
Verbal Fluency/3	x						
Verbal Fluency/4	x						
Pictorial Memory				x			
Draw-A-Child			x				
Factor 6							
Conceptual Grouping/5						objects	
Conceptual Grouping/6					objects	objects	
Conceptual Grouping/7						objects	
Factor 7							
Block Building/1						objects	
Block Building/2						objects	
Block Building/3						objects	
Block Building/4						objects	
Reading Readiness/1					word		
Factor 8							
Conceptual Grouping/7					objects	objects	
Conceptual Grouping/8						objects	
Conceptual Grouping/9						objects	

Table 6.35. Item-Total Correlations for Items Grouped By the Factors Identified by Factor Analysis of Entire Sample Item Scores

Factor 1 "Child Ratings"		Factor 2 Rote-Readiness"		Factor 3 "Verbal Memory"		Factor 4 "Classification 1"		Factor 5 "Verbal Fluency"		Factor 6 "Classification 2"		Factor 7 "Perceptual Motor"		Factor 8 "Classification 3"	
Items	r*	Items	r	Items	r	Items	r	Items	r	Items	r	Items	r	Items	r
CR1	.73	BI8	.49	VM1	.72	BI2	.58	NR4	.51	CG5	.86	BB1	.50	CG7	.52
CR2	.79	NR1	.62	VM2	.69	BI3	.66	PIP	.59	CG6	.66	BB2	.65	CG8	.60
CR3	.76	NR3	.67	VM3	.82	BI6	.60	VF1	.70	CG7	.52	BB3	.63	CG9	.75
CR4	.80	NR6	.53	VM4	.76	CG1	.44	VF2	.75			BB4	.81		
CR5	.66	RR2	.77	VM5	.84	CG2	.67	VF3	.75			RR1	.46		
CR6	.63	RR4	.51	VM6	.85	CG3	.60	VF4	.67						
CR7	.74					CG4	.80	PM	.65						
CR8	.80							DC	.80						

*Item-factor total correlation.

Key: BB = Block Building
BI = Basic Information
CG = Conceptual Grouping
CR = Child Rating Scale
DC = Draw A Child
NR = Number Readiness
PIP = Preschool Interpersonal Problem Solving
PM = Pictorial Memory
RR = Reading Readiness
VF = Verbal Fluency
VM = Verbal Memory

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APPENDIX A

FALL 1979 CHILD TEST BATTERY

Session Started: ________

Session Stopped: ________

Head Start Educational Services/BES Evaluation

CHILD TEST BATTERY

NTS Research Corporation
Durham, North Carolina

Under contract to:
Administration for Children, Youth, and Families
Department of Health, Education, and Welfare

Fall 1979

Tests

Block Building. 1
Basic Information 5
Number Readiness. 9
Verbal Memory 13
PIPS. 15

Conceptual Grouping . . .25
Reading Readiness 32
Verbal Fluency. 36
Pictorial Memory. 40
Draw-A-Child. 41

Materials

12 1" cubes
4 color cards
shape card
penny, nickel, dime
3 comparative cards

number flash cards
parade sequence card
16 PIPS child cards
7 PIPS toy cards

12 CG Blocks
5" x 8" white card
4 word cards
letter flash cards

6 sequence cards
stopwatch
pm card
child's pencil

1. Tester Name ______________________________

2. Location of Session
   - 01 Head Start Location
   - 02 Other (describe) ______________

3. Date of Session ______ / ______ / ______
   Month Day Year

4. Time of Session
   - 01 Morning
   - 02 Afternoon
   - 03 Evening

5. Session
   - 01 Initial Session
   - 02 2nd Attempt

6. Parent During Session
   - 01 Not Present
   - 02 Present

Did you mark "Session Started"?

IQ/1 Enc per trial
Trial 2 if necessary

BLOCK BUILDING

Materials Needed: 12 1-inch cubes.

Time Started: ____________

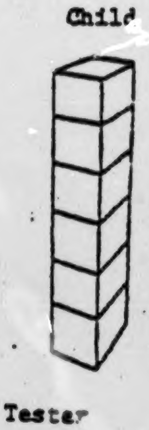
Make sure you are working on a flat, hard surface.

Build models in front of child. Leave enough room (8 inches) between child and model for child to build with his blocks.

The models are left standing during the child's attempts. If the child knocks down the model, rebuild it.

Don't hesitate long after the child responds or he will think he's expected to keep building.

1. Tower



Trial 1.

● SEE THESE BLOCKS WE HAVE TO PLAY WITH? WATCH I AM MAKING A BIG TALL TOWER. (Build 6 block tower.) LET'S SEE IF YOU CAN MAKE A TOWER JUST LIKE IT RIGHT HERE. (Point to space between model and child. Give child remaining blocks).

If the child does not respond, encourage once by saying:
● I'LL BET YOU CAN DO IT.

If the child puts blocks on or against the model, say:
● NO, MAKE YOUR OWN TOWER RIGHT HERE (point). (counts as encouragement).

If the child accidently knocks over his blocks while building, encourage the child to rebuild by saying:
● GO AHEAD AND FINISH IT. (counts as encouragement for same trial. If child doesn't respond to encouragement, score his original tower.)

If the child is putting on the 4th block which cause the tower to tumble, score "3" as that was the number in the stable tower. Blocks Blocks don't have to be lined up perfectly but they must be stable.

Trial 2.

If the child did not respond or successfully make a 6-block tower on Trial 1, scramble the child's blocks and say:
● LET'S TRY AGAIN. MAKE ME A(NOTHER) TOWER JUST LIKE THIS ONE (point to model).

(See instructions for Trial 1)

Child's Response	1st	2nd
# of blocks in stable tower		
	DK-R-NR 9	DK-R-NR 9

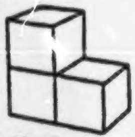
IQ/Enc per trial
Trial 2 if necessary

2. Chair

Trial 1. Scramble the blocks and say,

● NOW LET'S SEE IF YOU CAN MAKE A NICE CHAIR JUST LIKE THIS.

About 8 inches in front of the child place [illegible] blocks side by side. Then place 3rd block on top (Child sees the profile of the chair, as does tester).



● SEE THE CHAIR I MADE? YOU MAKE ANOTHER ONE JUST LIKE IT RIGHT HERE (point to the space between the model and the child and give the child remaining 9 blocks).

If the child doesn't respond, encourage once, by saying:
● I'LL BET YOU CAN DO IT.

If the child put blocks on or beside the model say:
● NO, YOU MAKE YOUR OWN CHAIR RIGHT HERE (point to the space). Counts as encouragement.

If the child accidently knocks over his blocks while building, encourage him to rebuild by saying:
● GO AHEAD AND FINISH IT. (Counts as encouragement for same trial. If child doesn't respond to encouragement, score original chair.)

Trial 2. If the child did not respond or make the block chair correctly (base blocks have to be touching or less than 1/4" apart) scramble his blocks and say:

● LET'S TRY IT AGAIN. MAKE ME A(NOTHER) CHAIR JUST LIKE THIS (point to the model).

(See instructions for Trial 1)

Child's Response:	1st		2nd	
	Yes	No	Yes	No
a. 2 correct blocks (horizontal or vertical)	1	2	1	2
b. Correct placement of third block and chair faces same direction as model	1	2	1	2
	DK-R-NR 99		DK-R-NR 99	

Stop if child didn't score "6" on item 1 or at least one "Yes" or item 2.

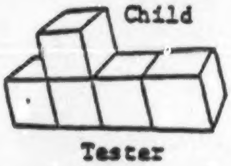
IQ/1 Enc per trial
Trial 2 if necessary

3. Building

Scramble the Blocks and say:

Trial 1. ● LET'S MAKE A BUILDING LIKE THIS.

Place four blocks in a row, touching each other on the sides and place a fifth block on the second block from the child's right (see below).



● SEE MY BUILDING? YOU MAKE ANOTHER ONE JUST LIKE IT RIGHT HERE (point and give the child remaining 7 blocks).

If child doesn't respond, encourage once by saying:
● I'LL BET YOU CAN DO IT.

If the child put blocks on or beside the model say:
● NO, MAKE YOUR OWN BUILDING RIGHT HERE (point). (Counts as encouragement).

If the child accidently knocks over his blocks while building, encourage him to rebuild by saying:
● GO AHEAD AND FINISH IT. (Counts as encouragement for same trial. If child doesn't respond to encouragement, score original building.)

Trial 2. If the child did not respond or make the exact building (i.e., base blocks touching or no more than 1/4" apart and correct placement of fifth block) scramble the blocks and say:

● LET'S TRY AGAIN. MAKE ME A(NOTHER) BUILDING JUST LIKE THIS ONE (point to model).

(See instructions for Trial 1)

Child's Response	1st		2nd	
	Yes	No	Yes	No
a. Correct base of 4 blocks	1	2	1	2
b. Top block is placed on the second block from the child's right (regardless of number of blocks in the base).	1	2	1	2
	DK-R-NR 99		DK-R-NR 99	

Stop if child didn't score at least one "yes" on item 2 or item 3.

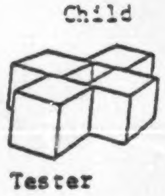
IQ/1 Enc per trial
Trial 2 if necessary

4. House

Scramble the blocks and say,

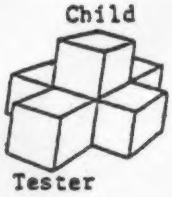
● NOW LET'S SEE IF YOU CAN MAKE A HOUSE JUST LIKE THIS. SEE, I M MAKING THE WALLS THIS WAY.

Place 4 blocks before the child as shown below (with right and left block indented slightly). Pause 3 seconds and say:



● AND THEN I'M GOING TO PUT THE ROOF ON LIKE THIS

Place the fifth block over the center space as shown.



● YOU MAKE ANOTHER ONE JUST LIKE MINE (give the child remaining 7 blocks).

If child doesn't respond, encourage once by saying:
● I'LL BET YOU CAN DO IT

If the child puts blocks on or beside model say:
● NO, YOU MAKE YOUR OWN HOUSE RIGHT HERE (point). (Counts as encouragement.)

If the child accidently knocks over his blocks while building, encourage the child to rebuild by saying:
● GO AHEAD AND FINISH IT. (Counts as encouragement for same trial. If child doesn't respond to encouragement, score original house.)

Trial 2. If the child did not respond or build it like the model, score his first house, scramble the child's blocks and say:

● LET'S TRY AGAIN. MAKE ME A(NOTHER) HOUSE JUST LIKE THIS ONE (point) to your model).

(See instructions for Trial 1)

Child's Response	1st		2nd	
	Yes	No	Yes	No
a. Correct base	1	2	1	2
b. Correct placement of top block	1	2	1	2
c. 4-block base is built with no space between the four blocks, or, four blocks are placed irregularly but support the roof.	1	2	1	2
	DK-R-NR 999		DK-R-NR 999	

Time Stopped: ____________

Time Started: ______

BASIC INFORMATION

IO/1 Rep/1 clarification

Materials Needed: 4 color cards, shape card, penny, nickel, dime.

1. Age

● HOW OLD ARE YOU?

If child says, "I'm almost _____" clarify by saying:
● HOW OLD ARE YOU NOW?

To pass item child must give correct number of years verbally or with fingers. If child does both, record the verbal response. Check accuracy of response after test.

Child's Response	Score		
	Yes	No	DK-R-NR
	1	2	9

IO/1 Rep per sub-item

2. Body Parts

● POINT TO YOUR HAND.

● POINT TO YOUR EYE.

● POINT TO YOUR ELBOW.

Child's Response	Score		
	Yes	No	DK-R-NR
Hand	1	2	9
Eye	1	2	9
Elbow	1	2	9

IQ/1 Rep (1st sub-item only)

3. Color Names

Hold up the red color card.

● WHAT COLOR IS THIS?

If child doesn't respond, repeat on 1st item only. Hold up card for maximum of 5 seconds. Proceed the same for blue, yellow and black cards (no repeats).

Child's Response	Score		
	Yes	No	DK-R-NR
red	1	2	9
blue	1	2	9
yellow	1	2	9
black	1	2	9

IQ/1 Rep/probe

4. Birthday

● TELL ME, WHEN IS YOUR BIRTHDAY?

If child doesn't respond, repeat. If child gives partial answer such as "just last week" or "at Easter" probe once with:
● WHAT MONTH IS (WAS) YOUR BIRTHDAY?

If child does not clarify response after the probe, score N.

Score "yes" if child has correct month. Check accuracy of response on front label.

Child's Response	Score		
	Yes	No	DK-R-NR
	1	2	9

01	January	05	May	09	September
02	February	06	June	10	October
03	March	07	July	11	November
04	April	08	August	12	December

Stop if DK-R-NR on all parts of 3 consecutive items.

IQ/1 Rep per sub-item

5. Coins

Place coins as shown (each 4 inches apart) in front of child.

child

dime penny nickel

tester

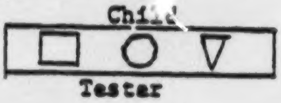
● POINT TO THE PENNY.
Repeat if child doesn't respond.

● POINT TO THE NICKEL.
Repeat if necessary.

● POINT TO THE DIME.
Repeat if necessary.

Child's Response	Score		
	Yes	No	DK-R-NR
penny	1	2	9
nickel	1	2	9
dime	1	2	9

6. Shapes



Place shape card in front of child, as shown.

● LOOK AT THIS CARD.

● POINT TO THE CIRCLE.
If child doesn't respond, repeat once for each sub-item.

● POINT TO THE SQUARE.
Repeat if necessary.

● POINT TO THE TRIANGLE.
Repeat if necessary.

Child's Response	Score		
	Yes	No	DK-R-NR
circle	1	2	9
square	1	2	9
triangle	1	2	9

Stop if DK-R-NR on all parts of 3 consecutive items.

7. Right-Left

IQ/1 Rep per sub-item

● LET'S SEE IF YOU CAN DO THIS. RAISE YOUR LEFT HAND.
Repeat if child doesn't respond.

If child raises both hands, score "No".

● NOW RAISE YOUR RIGHT HAND. Repeat if necessary.

Child's Response	Score		
	Yes	No	DK-R-NR
right	1	2	9
left	1	2	9

IQ/1 Rep

8. Days of Week

● THERE ARE SEVEN DAYS IN THE WEEK. THE FIRST DAY IS SUNDAY.
TELL ME ALL OF THE DAYS OF THE WEEK STARTING WITH SUNDAY.

If child doesn't respond, repeat by saying:
● TELL ME ALL OF THE DAYS OF THE WEEK STARTING WITH SUNDAY.

If child rambles, stop after 10 rambling responses.

Child's Response

DK-R-NR
99

NTS Code
# ☐
Seq. ☐

Time Stopped ________

Stop if DK-R-NR on all parts of 3 consecutive items.

Give only 1 & 2 to child under 4

IQ/1 Rep per item

NUMBER READINESS

Materials Needed: 3 comparative cards, numeral flash cards, sequence card, 7 wooden cubes, child's pencil

Time Started: ____________

1. Counting

● NOW WE ARE GOING TO TALK ABOUT NUMBERS. COUNT FOR ME AS FAR AS YOU CAN GO.

If child does not respond, repeat once by saying:
● I'LL BET YOU CAN DO IT. COUNT AS FAR AS YOU CAN GO.

If child asks about stopping before he hits 20, say:
● COUNT AS FAR AS YOU CAN GO. (Counts as repeat).

If child rambles, stop after 10 rambling responses.

Stop child at 20. If child wants to start over (s)he may do so.

Child's Response

DK-R-NR
9999

NTS Code	
#.	☐☐
Seq.	☐☐

IQ/1 Rep per sub item

2. Comparisons

Put comparative house cards in front of child. Do not point.
If child does something other than pointing (after the repeat) score DK-R-NR.

● LOOK AT THIS PICTURE. ONE HOUSE IS LARGE AND ONE HOUSE IS SMALL
WHICH HOUSE IS LARGE?

If the child doesn't respond, repeat once by saying:
● WHICH HOUSE IS LARGE?

Take away house card and put down cone card.

● NOW LOOK AT THESE ICE CREAM CONES. ONE CONE HAS MORE ICE CREAM AND ONE CONE HAS LESS ICE CREAM. WHICH CONE HAS LESS?

If child doesn't respond, repeat once by saying:
● WHICH CONE HAS LESS?

Take away cone card and put down pencil card.

● LOOK HERE. ONE PENCIL IS LONG AND ONE PENCIL IS SHORT. WHICH PENCIL IS LONG? *

If child doesn't respond, repeat once by saying:
● WHICH PENCIL IS LONG?

Child's Response	Score		
	Yes	No	DK-R-NR
picked large house	1	2	9
picked less ice cream	1	2	9
picked long pencil	1	2	9

Stop if child is under 4

IO/1 Rep (1st number only)

3. Recognize Numbers

Put number flash cards in random order. Hold up first card and ask:

● TELL ME WHAT THIS NUMBER IS.

Hold up each card for a maximum of 5 seconds.

If the child doesn't respond to the first number within 5 seconds, repeat once (first number only) by saying:

● I'LL BET YOU CAN DO IT. TELL ME WHAT THIS NUMBER IS. (Give additional 5 seconds). Whether or not child responds, go on to next number. Stop after 5 consecutive tally marks in DK-R-NR or "Wrong" (or combination). Make a tally mark for each number as child responds. Write totals after completion of item.

Number Correct Responses	Number Wrong Responses	Number DK-R-NR Responses
Total ______	Total ______	Total ______

IO/1 Rep/1 Clarification

4. Count Blocks

Place 7 wooden cubes in front of child.

● NOW TELL ME, HOW MANY BLOCKS ARE HERE?

If child doesn't respond, repeat once. If child holds up fingers, clarify with:

● HOW MANY IS THAT? (If child doesn't give correct verbal answer score "No".)

Score child's final verbal answer, not his/her method of counting.

Child's Response	Score		
	Yes	No	DK-R-NR
	1	2	9

Stop test if DK-R-NR on all parts of 3 consecutive items.

IQ/1 Rep per sub-item

5. Sequence

Put the sequence card in front of child. Do not point.

● LOOK AT THIS PICTURE. POINT TO THE CHILD WHO IS SECOND IN LINE.

If the child doesn't respond on any of the three, repeat question. Score response. If child doesn't point, score DK-R-NR.

● NOW POINT TO THE CHILD WHO IS THIRD IN LINE. Repeat if necessary.

● POINT TO THE CHILD WHO IS FIRST IN LINE. Repeat if necessary.

Child's Response	Score		
	Yes	No	DK-R-NR
Second	1	2	9
Third	1	2	9
First	1	2	9

IQ/1 Rep

6. Assign Number

Place six wooden cubes in a group in front of child (slightly off to side). Place number card (5,6,7,8) on other side.

● LOOK AT THESE BLOCKS. (Put your hand over blocks).

Sweep same hand over number card and say:
● POINT TO THE NUMBER THAT TELLS HOW MANY BLOCKS ARE HERE. (Return hand to blocks).

If child does not respond by pointing, repeat once by saying:
● POINT TO THE NUMBER THAT TELLS HOW MANY BLOCKS ARE HERE. If child still doesn't point to a number, score DK-R-NR.

Child's Response	Score		
	Yes	No	DK-R-NR
	1	2	9

Time Stopped: ______________

Stop test if DK-R-NR on all parts of 3 consecutive items.

VERBAL MEMORY

Time Started: ______

Read items 1-4 at a rate of about 1 word per second. Read sentences in items 5 and 6 slowly and clearly. Do not repeat any items.

If child doesn't respond, encourage once by saying:

- ● I'M SURE YOU CAN SAY THOSE WORDS.

If the child starts repeating the words before you have finished, say:

- ● WAIT - and continue with the item. After the item remind the child:
- ● REMEMBER TO WAIT UNTIL I HAVE FINISHED SAYING ALL THE WORDS BEFORE YOU START TO ANSWER.

Record only those responses child gave after you finished saying the words.

Record all responses in sequence given by child.

● NOW I'M GOING TO SAY SOME WORDS AND I WANT TO SEE HOW MANY OF THEM YOU CAN SAY AFTER ME. WAIT UNTIL I HAVE FINISHED SAYING ALL THE WORDS BEFORE YOU START. SAY THE WORDS JUST THE WAY I DO. LISTEN. (Make sure you have child's attention).

● HERE'S WHAT I WANT YOU TO SAY: TOY —— CHAIR —— LIGHT.

Child's Response

NTS Code:

DK-R-NR
99

2. ● NOW SAY: DOLL —— COAT —— DARK.

Child's Response

NTS Code:

DK-R-NR
99

3. ● NOW SAY: AFTER —— COLOR —— FUNNY —— TODAY.

Child's Response
NTS Code:

DK-R-NR
99

4. ● NOW SAY: AROUND —— BECAUSE —— UNDER —— NEVER.

Child's Response
NTS Code:

DK-R-NR
99

5. ● NOW SAY: THE BOY SAID GOODBYE TO HIS DOG EVERY MORNING BEFORE HE WENT TO SCHOOL.

Child's Response
NTS Code:

DK-R-NR
99

6. ● NOW SAY: THE GIRL TIED A PRETTY PINK RIBBON ON HER DOLL BEFORE SHE WENT OUT.

Child's Response
NTS Code:

DK-R-NR
99

Stop if DK-R-NR is circled for 3 consecutive items.

PRESCHOOL INTERPERSONAL PROBLEM-SOLVING TASK (PIPS)

Materials Needed: category sheets, 8 cut-out male pictures, 8 cut-out female pictures, 7 cut-out toys

Order of toys: truck, shovel, kite, swing, drum, boat, tricycle.

When to probe:
- a) DK-R-NR
- b) repeated answer
- c) answer that doesn't solve the problem

5 probes:
- a) say - WHAT CAN "A" SAY TO GET A CHANCE TO PLAY...
- b) do - WHAT CAN "A" DO TO GET A CHANCE TO PLAY...
- c) recap responses - NOW YOU'VE ALREADY SAID...
- d) classify responses - DOING _____ IS LIKE DOING _____ IS THERE SOMETHING ELSE "A" COULD...
- e) restate the story root - REMEMBER "A" WANTS TO HAVE A CHANCE TO PLAY WITH THIS TOY. WHAT CAN "A"...

Clarifying:
- a) TELL ME WHAT YOU MEAN (once per response box-up to 3 per story).

Time Started: ____________

IQ/2 probes per item
1 clarification per box

1. Truck

● I'VE GOT SOME PICTURES AND I'M GOING TO TELL YOU SOME STORIES ABOUT CHILDREN. LET'S PRETEND THAT ALL THE CHILDREN ARE __________ YEARS OLD. O.K.?
(insert child's age)

● HERE'S JOHNNY (MARY).

Place the picture upright in full view of the child.

● HERE'S JIMMY (SUE).

Place the picture next to Johnny (Mary).

● CAN YOU TELL ME WHAT TOY THIS IS?

Hold up the first toy (truck) and let the child respond. If the child does not correctly identify the toy say, THIS IS A TRUCK.

Place the toy picture so it overlaps that of Johnny (Mary).

● NOW, JOHNNY (MARY) (point) HAS BEEN PLAYING WITH THIS (never say "his") TRUCK (point) FOR A LONG TIME AND JIMMY (SUE) (point) WANTS A CHANCE TO PLAY WITH IT. BUT JOHNNY (MARY) KEEPS ON PLAYING WITH IT.

● (Memory cue): WHO'S BEEN PLAYING WITH THE TRUCK FOR A LONG TIME? YOU CAN POINT. Let the child point and say, (THAT'S RIGHT.) JOHNNY (MARY) (point). WHO WANTS TO PLAY WITH IT? Let the child respond, and say, (THAT'S RIGHT). JIMMY (SUE) (point). If the child does not respond correctly to the memory cues, repeat the story.

The memory cue is only to assure that the child understands the story. It can, in subsequent stories, be shortened to, ● WHO HAS IT?, WHO WANTS IT? The tester can judge at what point in the test memory cues are no longer needed. The direction, YOU CAN POINT, is given because the child does not need to remember the names of characters. Names are presented for interest only.

IQ/2 probes per item
1 clarification per box

JIMMY (SUE) WANTS TO PLAY WITH THE TRUCK. WHAT CAN HE/SHE DO TO GET A CHANCE TO PLAY WITH THE TRUCK?

See the administration manual for relevant information regarding probing and recording responses.

Child's Response		Category	Int/Ext
		1-19/81-83	91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

(THAT'S ONE WAY). NOW THE IDEA OF THIS GAME IS TO THINK OF LOTS OF WAYS TO GET A CHANCE TO PLAY WITH TOYS. O.K.?

IQ/2 probes per item
1 clarification per box

Use different names in all the following items.

2. Shovel

● HERE'S ____(A)________.

Place the picture upright in full view of the child.

● HERE'S ____(B)________.

Place the picture next to (A).

● CAN YOU TELL ME WHAT TOY THIS IS?

Hold up the shovel and let the child respond. If the child answers incorrectly say, THIS IS A SHOVEL.

Place the shovel so it overlaps with (A).

● NOW, LET'S PRETEND THAT (A) HAS BEEN PLAYING WITH THIS SHOVEL ALL MORNING AND (B) WANTS A CHANCE TO PLAY WITH IT.

● (Memory cue): WHO HAS IT? WHO WANTS IT? (Use longer version if necessary.)

● (B) WANTS TO PLAY WITH THE SHOVEL. WHAT CAN HE/SHE DO TO GET A CHANCE TO PLAY WITH THE SHOVEL.

Child's Response		Category	Int/Ext
		1-19/81-83	91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

If the child responds with a relevant solution, say,
● NOW YOU'VE GOT THE IDEA OF THE GAME. (NOW YOU'VE GOT TWO WAYS.)

If the child responded with a new solution on the first item but not the second, say,
● REMEMBER, THE IDEA OF THIS GAME IS TO THINK OF LOTS OF WAYS TO GET A CHANCE TO PLAY WITH TOYS.

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

IQ/2 probes per item
1 clarification per box

3. Kite

● HERE'S ____(C)____.

Place the picture upright in full view of the child.

● HERE'S ____(D)____.

Place the picture next to (C).

● CAN YOU TELL ME WHAT TOY THIS IS?

Hold up the kite and let the child respond. If the child answers incorrectly say, THIS IS A KITE.

Place the kite so it overlaps with (C).

● NOW, (C) HAS BEEN OUT IN THE YARD PLAYING WITH THIS KITE FOR A LONG TIME AND (D) THINKS HE WOULD LIKE TO PLAY WITH THE KITE.

Use a memory cue here if needed.

● WHAT CAN (D) (point to D) DO SO HE/SHE CAN HAVE A CHANCE TO FLY THE KITE (point to the kite)?

Child's Response		Category 1-19/81-83	Int/Ext 91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

IQ/2 probes per item
1 clarification per box

4. Swing

HERE'S ____(E)____.

Place the picture upright in full view of the child.

HERE'S ____(F)____.

Place the picture next to (E).

CAN YOU TELL ME WHAT TOY THIS IS?

Hold up the swing and let the child respond. If the child answers incorrectly say, THIS IS A SWING.

Place the swing so it overlaps with (E).

TODAY (F) WANTS TO USE THE SWING BUT (E) IS ALREADY ON IT.

Use a memory cue here if needed.

WHAT CAN (F) (point to F) DO SO HE/SHE CAN HAVE A CHANCE ON THE SWING (point to the swing)?

Child's Response		Category 1-19/81-83	Int/Ext 91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

IQ/2 probes per item
1 clarification per box

5. Drum

- HERE'S ____(G)____.

  Place the picture upright in full view of the child.

- HERE'S ____(H)____.

  Place the picture next to (G).

- CAN YOU TELL ME WHAT TOY THIS IS?

  Hold up the drum and let the child respond. If the child answers incorrectly say, THIS IS A DRUM.

  Place the drum so it overlaps with (G).

- ONE DAY (G) WAS PLAYING WITH THIS DRUM AND HE/SHE WAS PLAYING WITH IT FOR A LONG TIME. (H) WANTED TO PLAY WITH IT.

  Use a memory cue here if needed.

- WHAT CAN (H) (point to H) DO SO HE/SHE CAN GET TO PLAY WITH THE DRUM (point to the drum)?

Child's Response		Category 1-19/81-83	Int/Ext 91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

IQ/2 probes per item
1 clarification per box

6. Boat

- HERE'S ____(M)____.

  Place the picture upright in full view of the child.

- HERE'S ____(N)____.

  Place the picture next to (M).

- CAN YOU TELL ME WHAT TOY THIS IS?

  Hold up the boat and let the child respond. If the child answers incorrectly say, THIS IS A BOAT.

  Place the boat so it overlaps with (M).

- (M) HAS BEEN PLAYING WITH THIS BOAT FOR A LONG TIME AND (N) WANTS TO PLAY WITH IT.

  Use a memory cue here if needed.

- WHAT CAN (N) (point to N) DO SO HE/SHE CAN GET TO PLAY WITH THE BOAT (point to the boat)?

Child's Response		Category 1-19/81-83	Int/Ext 91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

IQ/2 probes per item
1 clarification per box

7. Tricycle

- HERE'S ____(R)____.

  Place the picture upright in full view of the child.

- HERE'S ____(S)____.

  Place the picture next to (R).

- CAN YOU TELL ME WHAT TOY THIS IS?

  Hold up the tricycle and let the child respond. If the child answers incorrectly say, THIS IS A TRICYCLE.

  Place the tricycle so it overlaps with (R).

- NOW, (R) HAS HAD THE TRICYCLE ALL MORNING AND (S) WANTS TO HAVE A CHANCE WITH IT.

  Use a memory cue here if needed.

- WHAT CAN (S) (point to S) DO SO HE/SHE CAN RIDE THE TRICYCLE (point to the tricycle)?

Child's Response		Category	Int/Ext
		1-19/81-33	91/92
	DK-R-NR		
	DK-R-NR		
	DK-R-NR		

New Solution
Yes No

Stop if child fails to give a new solution to 2 consecutive stories (6 boxes).

BREAK

Stop here to let the child have some physical activity. Use the ball or beanbag to play a game for two or three minutes. Before resuming the testing ask the child if he/she wants to go to the bathroom or get a drink of water.

IQ/1 Rap
per sub-item

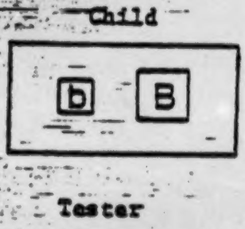
CONCEPTUAL GROUPING

Materials Needed: 1 piece of cardboard (5" x 8"), and a set of 12 blocks: 6 squares and 6 circles—with each shape provided in three colors (red, yellow, blue) and two sizes per color.

Time Started: ______________

Place cardboard in front of child. Have blocks out of child's sight and reach. When introducing test, do not mention colors, shapes, or sizes. Don't pause long after child's response or child will think he's expected to do more. Accept any clearly indicated response (pointing for "pick-up" - picking up for "put on card").

1. Place blue squares exactly as shown.



● PICK UP THE LITTLE ONE AND GIVE IT TO ME.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block.

● NOW GIVE ME THE BIG ONE.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block. After the child has responded to both questions, confirm or correct his responses by saying:

● (YES) THIS IS THE LITTLE ONE (pointing), AND THIS IS THE BIG ONE (pointing).

IQ/1 Rep per sub-item

2. Remove the 2 blue squares and place the small circles exactly as shown.

Child

ⓨ ⓡ ⓑ

Tester

Say,

ⓐ HAND ME THE RED ONE.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block the child selected.

ⓑ NOW GIVE ME THE YELLOW ONE.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block the child selected.

ⓒ FIND THE BLUE ONE AND GIVE IT TO ME.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block. After the child has responded to all three questions. Say,

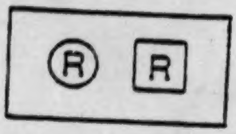
ⓓ (YES) THIS IS THE RED ONE (point), THIS IS THE YELLOW ONE (point) AND THIS IS THE BLUE ONE (point).

Stop test if DK-R-NR is scored on all parts of 2 consecutive items.

IO/1 Rep per sub-item

3. Remove the 3 small circles. Place the large red circle and square exactly as shown below.

Child



Tester

Be sure the edge of the square is parallel to the edge of the cardboard. Say,

● FIND THE SQUARE ONE AND GIVE IT TO ME.

Score		
Yes	No	DK-R-NR
1	2	9

Replace the block the child selected.

● NOW GIVE ME THE ROUND ONE.

Score		
Yes	No	DK-R-NR
1	2	9

After he has responded to both questions. Say,

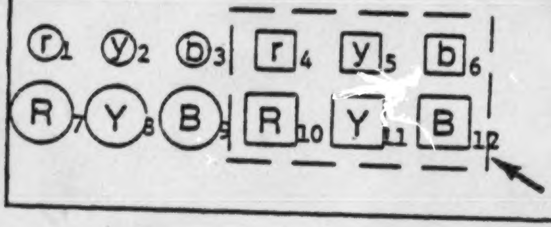
● (YES) THIS IS THE SQUARE ONE (point) AND THIS IS THE ROUND ONE (point).

Stop test if DK-R-NR is scored in all parts of 2 consecutive items.

4. All Squares

Scatter all of the 12 blocks randomly on the table before the child. Make certain that all the blocks are clearly visible and within the child's reach and that none are on the cardboard. Say,

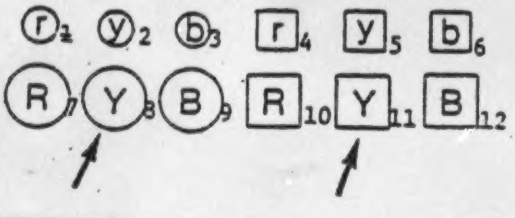
NOW I HAVE SOME MORE TO SHOW YOU. SEE ALL OF THESE? FIND ALL THE SQUARE ONES AND PUT THEM RIGHT HERE ON THIS CARD (point). REMEMBER, PUT ALL THE SQUARE ONES OVER HERE (point to the card).

Child's Response	Score		
(put an X on the blocks the child put on the cardboard)	Yes	No	DK-R-NR
 r 1 y 2 b 3 r 4 y 5 b 6 R 7 Y 8 B 9 R 10 Y 11 B 12	1	2	9

5. Big, Yellow

Rescramble all the blocks and say,

NOW FIND ALL THE BIG YELLOW ONES AND PUT THEM ON THE CARD. REMEMBER, FIND ALL THE BIG YELLOW ONES.

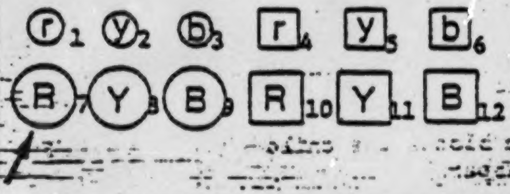
Child's Response	Score		
(put an X on the blocks the child put on the cardboard)	Yes	No	DK-R-NR
 r 1 y 2 b 3 r 4 y 5 b 6 R 7 Y 8 B 9 R 10 Y 11 B 12	1	2	9

Stop test if DK-R-NR is scored in all parts of 2 consecutive items.

6. Big, Round, Red

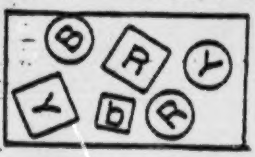
Rescramble all the blocks and say,

● NOW SEE HOW MANY BIG ROUND RED ONES YOU CAN FIND. REMEMBER YOU'RE LOOKING FOR BIG ROUND RED ONES.

Child's Response	Score		
(put an X on the blocks the child pointed to)	Yes	No	DK-R-NR
 r 1 y 2 b 3 r 4 y 5 b 6 R 7 Y 8 B 9 R 10 Y 11 B 12	1	2	9

7. Place the small blue square and all the large blocks except the large blue square on the cardboard in a random fashion. Remove all other blocks from the child's reach.

Child

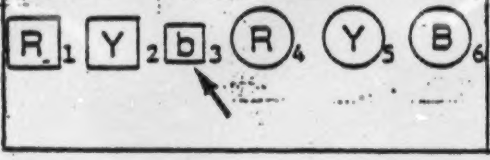


Tester

Say,

● WHICH ONE ON THE CARD DOES NOT GO WITH THE OTHER ONES ON THE CARD?

If child choses more than 1, mark the blocks and score "No".

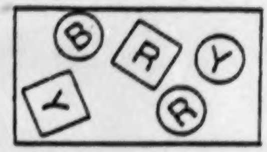
Child's Response	Score		
(put an X on the block the child identified)	Yes	No	DK-R-NR
	1	2	9

Stop if DK-R-NR is scored on all parts of 2 consecutive items.

IO/1 Rep

8. Clear the card and place all large blocks except large blue square on cardboard in random fashion. Put the rest of the scrambled blocks in fron of the child.

Child



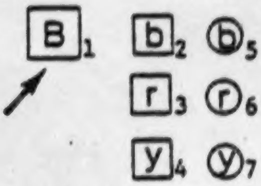
Tester

● ONE OF THESE (point to the scrambled blocks) GOES BEST WITH THE THINGS ON THE CARD. FIND IT AND PUT IT ON THE CARD.

If the child gets more than 1, mark the blocks and score No.

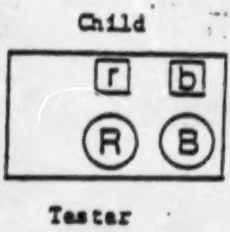
If the child selects a block on the card replace it and say,

● WHICH ONE OF THESE (point to scrambed blocks) GOES BEST WITH THE THINGS ON THE CARD? (counts as repeat) If child again selects block from card, circle DK-R-NR.

Child's Response	Score		
(put an X on the block the child identified)	Yes	No	DK-R-NR
	1	2	9

Stop test if DK-R-NR is scored in all part 2 consecutive items.

9. Remove the blocks from the cardboard. Arrange the large red and blue circles and small red and blue squares on the cardboard as shown (off-center). Scramble the other blocks and place them near child.



Say,

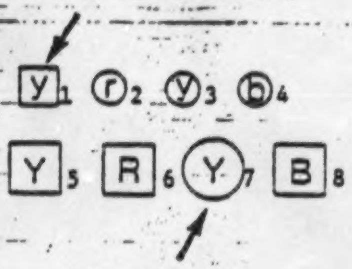
● TWO OF THESE HERE (point to the scrambled blocks) GO BEST WITH THE THINGS ON THE CARD. FIND BOTH OF THEM AND PUT THEM ON THE CARD.

If the child chooses more or less than 2 blocks remove chosen blocks, rescramble and say,

● REMEMBER, I ASKED YOU TO FIND 2. WHICH 2 FROM HERE (point) GO BEST WITH THE THINGS ON THE CARD? (counts as repeat) If this is child's final response mark blocks and score No.

If the child chooses a block on the cardboard replace it and say,

● WHICH 2 FROM HERE (point to the scrambled blocks) GO BEST WITH THE THINGS ON THE CARD? FIND THEM AND PUT THEM HERE ON THE CARD. (counts as repeat) If this is the child's final response, circle DK-R-NR.

Child's Response	Score		
(put an X on the blocks the child places on the cardboard)	Yes	No	DK-R-NR
 	1	2	9

Time Stopped: ____________

Do not give to child under 4

IQ/1 Rep

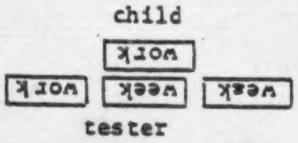
READING READINESS

Materials Needed: 4 word cards, alphabet flash cards, and 6 sequence cards.

Time Started: __________

1. Word Matching

Lay 3 word cards out in row in front of child as shown. Lay key card in front of row.



● I HAVE THREE WORDS HERE (point to row) AND ONE WORD HERE (point). POINT TO THE ONE HERE (point to row) THAT IS THE SAME AS THIS ONE (point to key card).

If the child doesn't respond or points to the key card, repeat once by saying:

● POINT TO THE ONE HERE (point to row) THAT IS THE SAME AS THIS ONE (point to key card). If child doesn't point, score DK-R-NR.

Child's response	Score		
	Yes	No	DK-R-NR
child selected correct card	1	2	9

IQ/1 Rep

3. Sequence

Lay example (egg) sequence cards on table in front of child in 1 - 3 - 2 sequence.

child
1 - 3 - 2
tester

● LOOK AT THESE PICTURES (point and pause) THESE PICTURES ARE MIXED UP. THEY CAN BE PUT IN A ROW THE RIGHT WAY, LIKE THIS.

Re-order in sequence (1-2-3 from child's view).

child
3 - 2 - 1
tester

● SEE FIRST THE EGG WAS WHOLE (point). THEN SOMEONE CRACKED IT (point). THEN THEY COOKED IT (point and pause).

Remove the first set, put out the apple set in 2 - 1 - 3 order.

child
2 - 1 - 3
tester

● THESE PICTURES ARE ALSO MIXED UP. NOW PUT THEM IN A ROW THE RIGHT WAY SO THEY TELL A STORY.

If child doesn't respond or stacks cards, (unstack, and) repeat once by saying:

● I'LL BET YOU CAN DO IT. PUT THESE PICTURES IN A ROW SO THAT THEY TELL A STORY.

● If child puts card in 1-2-3 or 3-2-1 order, ask. WHICH PICTURE COMES FIRST?

Child's Response	Score	
	Yes	No
child put cards in 3-2-1 or 1-2-3 sequence and named card 1 as first.	1	2
Child put cards in L → R sequence: child 3 - 2 - 1 tester	1	2

DK-R-NR
99

4. Recite Alphabet

● LET'S DO THE ALPHABET. SAY YOUR A,B,C's OUT LOUD FOR ME.

If the child doesn't respond, repeat once by saying:
● I'LL BET YOU CAN DO IT. SAY THE ALPHABET STARTING WITH A,B,C.

If the child asks to start again, (s)he may do so.

If child rambles, stop after 10 rambling responses.

Child's Response

1. ________
2. ________
3. ________
4. ________
5. ________
6. ________
7. ________
8. ________
9. ________
10. ________
11. ________
12. ________
13. ________
14. ________
15. ________
16. ________
17. ________
18. ________
19. ________
20. ________
21. ________
22. ________
23. ________
24. ________
25. ________
26. ________
27. ________
28. ________
29. ________
30. ________

DK-R-NR
9

NTS Code

☐☐

Seq. ☐☐

Time Stopped: ________

VERBAL FLUENCY

IQ/1 Enc

Materials Needed: Stopwatch

Administer All Items.

Time Started ____________

1. Things to Eat

● NOW WE ARE GOING TO PLAY A DIFFERENT GAME. FIRST I WILL NAME SOME THINGS AND THEN IT WILL BE YOUR TURN. WAIT UNTIL I HAVE FINISHED BEFORE YOU START. LISTEN. LET'S SEE HOW MANY DIFFERENT THINGS TO EAT YOU CAN THINK OF BEFORE I SAY STOP. YOU KNOW, LIKE BREAD AND POTATOES. READY, GO. (Start watch, time for 20 sec.).

If the child waits for you to record each response before giving the next encourage once by saying:

● KEEP GOING I'LL WRITE THEM WHILE YOU TALK. (Keep timing.)

If after the first 6 seconds the child has given no responses, only 1 correct response, or only repeated the items you said, encourage once by saying:

● TRY TO TELL ME SOME OTHER THINGS TO EAT. (Keep timing.)

If the child gives 3 consecutive responses with the same key word (fried eggs, boiled eggs, scrambled eggs) encourage once by saying:

● WHAT OTHER THINGS TO EAT CAN YOU THINK OF? (Keep timing.)

If you don't understand a child's response write it phonetically and after the 20 seconds say:

● YOU SAID ___________. WHAT IS THAT? If child clarifies response write in clarification in parenthesis by original response.

In all cases wait out 20 seconds, then say:

● OK, STOP.

Child's Response	NTS Codes	
	# Edibles	☐☐
	# Other	☐☐

DK-R-NR
9999

2. Animals

NOW LET'S SEE HOW MANY DIFFERENT ANIMALS YOU CAN THINK OF BEFORE I SAY STOP. YOU KNOW, LIKE CAT AND BEAR. READY GO. (Start watch, time for 20 seconds).

If after the first 6 seconds the child has given no responses, only 1 correct response, or only repeated the items you said, encourage once by saying:

TRY TO TELL ME SOME OTHER ANIMALS. (Keep timing.)

If the child gives 3 consecutive responses with the same key word (big dogs, little dogs, black dogs) encourage once by saying:

WHAT OTHER ANIMALS CAN YOU THINK OF? (Keep timing.)

If you don't understand a child's response write it phonetically and after the 20 seconds say:

YOU SAID ____________. WHAT IS THAT? If child clarifies response write in clarification in parenthesis by original response.

If the child says "Whiskers" or "Spotty", after the 20 seconds say:

WHAT KIND OF ANIMAL IS SPOTTY. If the child clarifies response, write clarification in parenthesis by original response.

In all cases wait out 20 seconds, then say:

OK, STOP.

Child's Response	NTS Codes
	# Animals ☐☐
	# Other ☐☐
	# Unidentified Proper Names ☐☐

DK-R-NR
9999

3. Things to Wear

IQ/1 Enc

☺ NOW TELL ME ALL THE THINGS TO WEAR THAT YOU CAN THINK OF BEFORE I SAY STOP. YOU KNOW, LIKE SHOES. READY GO. (Start watch, time for 20 seconds.)

If after the first 6 seconds the child has given no responses, only 1 correct response, or only repeated the items you said, encourage once by saying:

☺ TRY TO TELL ME SOME OTHER THINGS TO WEAR. (Keep timing.)

If the child gives 3 consecutive responses with the same key word (heavy coat, light coat, rain coat) encourage once by saying:

☺ WHAT OTHER THINGS TO WEAR CAN YOU THINK OF? (Keep timing.)

If you don't understand a child's response write it phonetically and after the 20 seconds say:

☺ YOU SAID____________. WHAT IS THAT? If child clarifies response write in clarification in parenthesis by original response.

In all cases wait out 20 seconds, then say:

☺ OK, STOP.

Child's Response	NTS Codes
	# Articles ☐☐ # Other ☐☐

DK-R-NR
9999

4. Things to Ride

NOW LET'S SEE HOW MANY DIFFERENT THINGS TO RIDE ON YOU CAN THINK OF BEFORE I SAY STOP. YOU KNOW, LIKE A BUS. READY GO. (Start watch, time for 20 seconds.)

If after the first 6 seconds the child has given no responses, only 1 correct response, or only repeated the items you said, encourage once by saying:

TRY TO TELL ME SOME OTHER THINGS TO RIDE ON. (Keep timing.)

If the child gives 3 consecutive responses with the same key word (green bike, big bike, little bike) encourage once by saying:

WHAT OTHER THINGS TO RIDE ON CAN YOU THINK OF? (Keep timing.)

If you don't understand a child's response write it phonetically and after the 20 seconds say:

YOU SAID __________. WHAT IS THAT? If child clarifies response write in clarification in parenthesis by original response.

In all cases wait out 20 seconds, then say:

OK, STOP.

Child's Response	NTS Codes
	# Vehicles/ Animals ☐☐
	# Other ☐☐

DK-R-NR
9999

Time Stopped __________

IQ/1 Rep/1 clarification

PICTORIAL MEMORY

Materials Needed: Pictorial Memory Card, Stopwatch

Time Started: ________

● I AM GOING TO SHOW YOU A PICTURE OF SOME THINGS. THEN I WILL TAKE IT AWAY AND SEE HOW MANY OF THE THINGS YOU CAN REMEMBER.

● LOOK CAREFULLY. (Turn over card. Start stopwatch). WE HAVE A: (point to each) CAT, BOOK, SPOON, BED, SCISSORS, AND TREE.

Allow a few more seconds for inspection for a total of 10 seconds including naming time. Remove card from sight. Reset the stopwatch.

● NOW TELL ME WHAT YOU SAW.

Start the stopwatch. Allow 90 seconds total time for the child to respond.

If the child does not respond within 10 seconds, repeat once by saying:
● I'LL BET YOU CAN DO IT. TELL ME WHAT YOU SAW.

If the child names only 1 or 2 objects to start, wait 10 seconds then use the clarification:
● AND WHAT ELSE?

Or if the child names 3 or 4 objects and stops, wait 10 seconds then use the clarification:
● TRY TO TELL ME SOME MORE OF THEM.

Only 1 repeat and 1 of the probes may be used.

The test may be stopped before the 90 seconds have elapsed if it seems apparent that the child is through responding. (Wait at least 10 seconds after the last response.)
Score "Yes" if child names or describes object correctly. "Thing you cut with" is correct for scissors, but animal is wrong for cat. Circle No for all unmentioned items (unless DK-R-NR is circled for entire test). Ignore any responses of items not pictured on card.

	Yes	No	
cat (kitten)	1	2	DK-R-NR 999999
book	1	2	
spoon	1	2	
bed	1	2	
scissors	1	2	
tree	1	2	

IO/1 Enc

DRAW-A-CHILD

Material Needed: Child's pencil

Time Started: ______________

Place blank page in front of child with directions facing you. If child is a girl, ask her to draw a girl; if child is a boy, ask him to draw a boy.

● LET'S SEE YOU DRAW A BOY (GIRL) ON THIS PAGE (point). DRAW THE BEST PICTURE YOU CAN. BE SURE TO MAKE ALL OF HIM (HER). (Give child pencil).

If the child doesn't respond or wants to draw something else, encourage once by saying:

● I'M SURE YOU CAN MAKE A PICTURE OF A BOY (GIRL). TRY TO MAKE IT RIGHT HERE (point).

If the child asks questions about how to make it, encourage once by saying:

● YOU DECIDE. JUST MAKE THE BEST PICTURE OF A BOY (GIRL) THAT YOU CAN.

The child may scratch out parts of his picture in the process of drawing but try to discourage child from starting over completely. If child insists on starting over, after the test make sure to indicate which drawing is to be scored. Do not let child use your eraser.

If the child has not finished after 5 minutes, say:

● TRY TO FINISH THE BOY (GIRL) NOW.

When the child stops drawing:

● IS IT ALL DONE? (When it is done, praise the child. Mark the top of the drawing. Label body parts only if child volunteers information).

DK-R-NR

99

Mark "Session Stopped"
When child leaves.

Time Stopped: ______________

TESTING CONDITIONS

Circle appropriate statements

1. Environmental Conditions

   1. No problems --- go to Administration.
   2. Problems with testing area. Describe________________________
   ____
   3. Child disrupted during testing. Describe________________________
   ____

2. Administration

   1. No problems — go to Materials.
   2. Test administrator procedural errors (that may have affected outcome of item). Describe________________________
   ____
   3. Tests given out of sequence. Describe________________________
   ____

3. Materials

   1. No problems --- go to Child Performance.
   2. Problems with test materials. Describe________________________
   ____
   ____

4. Child Performance

   1. No problems — go to next page.
   2. Child had difficulty speaking or understanding English.
   3. Child was non-verbal.
   4. Child inattentive, restless, difficult to control. Describe____________
   ____
   ____
   5. Child was uncooperative, refused to respond. Describe____________
   ____
   ____
   ____
   6. Child had difficulty due to physical condition. Describe____________
   ____
   7. Special child related problems. Describe________________________
   ____

CHILD RATINGS

Circle appropriate statements

A. Attentiveness

1. Attentive, involved, responsive.
2. Somewhat inattentive and uninvolved.
3. Easily distracted, must be urged to pay attention.

B. Emotionality

1. Actively enjoys task, enthusiastic.
2. Matter of fact/neutral.
3. Appears distressed, or expresses dislike.

C. Persistence

1. Very persistent, difficult items lead to redoubled effort.
2. Some persistence, doesn't give up without trying.
3. Little persistence, gives up quickly.

D. Response Speed

1. Responds quickly to instructions, no hesitation.
2. Some deliberation, but response generally not slow.
3. Often slow to respond.

E. Talkativeness

1. Very talkative (e.g., provides many elaborations).
2. Average amount of verbal expression.
3. Not talkative, gives minimal verbal response.

F. Speech Comprehensibility

1. Child's speech not at all difficult to understand.
2. Child's speech somewhat difficult to understand.
3. Child's speech extremely difficult to understand.
4. Child was non-verbal.

G. Initial Reaction

1. Child quickly adapted to test situation.
2. Child was somewhat hesitant in the beginning.
3. Child was generally resistive and uncomfortable.

H. Tester Reaction

1. Enjoyed testing this particular child a great deal.
2. Found testing this particular child somewhat enjoyable.
3. Found little enjoyment in testing this particular child.

Put any general comments on next page.

The following subtests in this battery were adapted from the McCarthy Scales of Children's Abilities with permission from the Psychological Association: Block Building, Verbal Fluency, Pictorial Memory, Conceptual Grouping, Verbal Memory, and Draw a Child. Reading Readiness, Number Readiness, and Basic Information were adapted from the Basic School Skills Inventory with permission of Donald Hammill of Pro-Ed. The Preschool Interpersonal Problem-Solving Task was adapted with permission of Myrna B. Shure and George Spivak of the Hahnemann Medical College and Hospital of Philadelphia. The Child Ratings were adapted from the Test Situation Ratings form prepared by the Educational Testing Service for the longitudinal study on Young Children and Their First School Experience.

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